IN THE OFFICE OF ADMINISTRATIVE HEARINGS

PIMA COUNTY, a body politic, PIMA COUNTY FLOOD CONTROL DISTRICT; SARAH BARCHAS; and GREGORY C. and CAROL A. SHINSKY, et al., Appellants, vs. ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY, Respondent; Intervenor: ROSEMONT COPPER COMPANY RE: Aquifer Protection Permit No. : P-106100	**No. 12-002-WQAB** (Previously remanded to the Board) **No. 12-003-WQAB** (Previously remanded to the Board) **No. 12-004-WQAB** **ADMINISTRATIVE LAW JUDGE DECISION**

HEARING: August 27 through 31, September 19 through 21, 2012, with the record held open until May 31, 2013 for consideration of post hearing submissions

APPEARANCES: Assistant Attorney General Curtis Cox for the Arizona Department of Environmental Quality; Attorneys G. Van Velsor Wolf Jr., Scott M. Deeny, and Mark A. McGinnis of Salmon, Lewis & Weldon, PLC for Appellants Gregory C. and Carol A. Shinsky, the Arizona Mining Reform Coalition, the Coalition for Sonoran Desert Protection, Dino J. DeConcini, Elizabeth B. Murfree DeConcini, Stanley R. Hart, John M. Kozma, Thomas F. Purdon, Save the Scenic Santa Ritas, the Sky Island Alliance, David S. Steele, Arnold B. Urken, and Nan Stockholm Walden and Richard S. Walden; Attorney Lawrence V. Robertson, Jr. for Appellant the Center for Biological Diversity; Attorneys Norman D. James, Todd C. Wiley, and Sean T. Hood of Fennemore Craig, P.C. for Intervenor Rosemont Copper Company

ADMINISTRATIVE LAW JUDGE: Thomas Shedden

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ACRONYMS USED

ABA	Acid Based Accounting
ADEQ	Arizona Department of Environmental Quality
AL	Alert Level
ALJ	Administrative Law Judge
AMRC	Arizona Mining Reform Coalition
AQL	Aquifer Quality Limit
AWQS	Aquifer Water Quality Standard
BADCT	Best Available Demonstrated Control Technology
DSTF	Dry Stack Tailings Facility
FICO	Farmer's Investment Company
HLP	Heap Leach Pad
LTF	Licensing Time Frame
MPO	Mining Plan of Operations
MWMP	Meteoric Water Mobility Procedure
NAG	Net Acid Generating
NEPA	National Environmental Policy Act
PAG	Potentially Acid Generating
PET	Potential Evapotranspiration
PMA	Pollutant Management Area
POC	Point of Compliance
SCS	Soil Conservation Service
SPLP	Synthetic Precipitation Leaching Procedure
SSSR	Save the Scenic Santa Ritas
WRSA	Waste Rock Storage Area

INTRODUCTION

Rosemont Copper Company ("Rosemont") plans to build an open pit copper mine and processing facility in the Santa Rita Mountains, south of Tucson. Rosemont applied for, and was issued Aquifer Protection Permit No. P-106100 (the "Permit") by the Arizona Department of Environmental Quality ("ADEQ"). The Permit is a consolidated, area-wide permit that covers nine discharging facilities, eight of which are at issue in the hearing.

A number of people filed appeals with ADEQ, which then referred the appeals to the Water Quality Appeals Board ("Board"). While the matters were pending at the Board, Rosemont intervened. The Board consolidated the appeals and set them for a hearing before the Office of Administrative Hearings, an independent state agency.

Before the hearing, Docket No. 12-003-WQAB (appellant Sarah Barchas) was dismissed for lack of prosecution, and Pima County, the appellant in Docket No. 12-002-WQAB, settled its claims and withdrew its appeal.

There are a number of appellants in Docket No. 12-004-WQAB, but they all joined in Gregory C. and Carol A. Shinsky's appeal and raised no issues independent of the Shinskys' appeal. The Shinskys and related appellants raised 19 issues, (typically referred to by number) but not all 19 issues were considered at the hearing. At the hearing, appellants presented what was in most respects a single, unified case.

The docket for all three matters, including ADEQ's and the Board's administrative records and all exhibits, is publicly accessible at: https://portal.azoah.com/oedf/documents/12-002-WQAB/ .

FINDINGS OF FACT

Background Information[1]

1. On March 3, 2009, ADEQ received from Rosemont its application for an aquifer protection permit (the "Application").

2. Rosemont's Application was evaluated by ADEQ's technical staff, which issued to Rosemont several notices of deficiencies or requests for additional

[1] Subheadings are used to assist the reader and the information in any subsection is not necessarily applicable solely to that subsection.

information. Rosemont's responses to these requests were also evaluated by ADEQ's technical staff. More detail about ADEQ's evaluation of the Application is found below in the section addressing Appellants' Issue 12.

3. On December 20, 2011, ADEQ had published a Public Notice informing the public that a draft permit was available for review and that on January 5, 2012, a Public Hearing would be held to allow the public to comment about the draft permit.

4. ADEQ accepted written comments about the draft permit during a public comment period from December 20, 2011 to February 3, 2012.

5. On April 2, 2012, ADEQ issued a "Summary and Response to Public Comments." As set forth below in the section addressing Appellants' Issue 11, ADEQ later learned that it had not responded to all the comments and subsequently issued a supplemental response.

6. On April 3, 2012, ADEQ issued to Rosemont the Permit, which authorizes Rosemont to discharge pollutants from nine facilities.

7. Appellants then filed with ADEQ their Notices of Appeal, which were referred to the Board.

8. On June 14, 2012, the Board issued a Notice of Hearing setting these three consolidated matters for hearing on July 20, 2012, at the Office of Administrative Hearings in Phoenix, Arizona.

9. The Notice of Hearing provided that the purpose of the hearing was to review ADEQ's decision to grant the Permit.

10. The matter was continued and the hearing was conducted on August 27-31, 2012 and September 17-20, 2012. The record was held open to allow the parties to submit written closing arguments and post-hearing briefs.

Docket No. 12-002-WQAB

11. Pima County, a body politic, and Pima County Flood Control District ("Pima County") are the appellants in Docket No. 12-002-WQAB.

12. Pima County entered a settlement with Rosemont and ADEQ that resolved its issues on appeal.

13. On August 30, 2012, Pima County filed a "Motion for Severance and Referral to the Water Quality Appeals Board."

14. In Case Management Order No. 14, dated September 12, 2012, the Administrative Law Judge ("ALJ") granted Pima County's Motion, severed Docket No. 12-002-WQAB from this consolidated matter and remanded it to the Board.

Docket No. 12-003-WQAB

15. Sarah Barchas is the appellant in Docket No. 12-003-WQAB. In Case Management Order No. 12, dated August 20, 2012, the ALJ granted "Rosemont's Renewed Motion to Dismiss Barchas Appeal."

16. In Case Management Order No. 15, dated September 12, 2012, the ALJ severed Docket No. 12-003-WQAB from this consolidated matter and remanded it to the Board.

Docket No. 12-004-WQAB

17. The appellants in Docket No. 12-004-WQAB are Gregory C. and Carol A. Shinsky, the Arizona Mining Reform Coalition (the "AMRC"), the Center for Biological Diversity (the "Center"), the Coalition for Sonoran Desert Protection, Dino J. DeConcini, Elizabeth B. Murfree DeConcini, Stanley R. Hart, John M. Kozma, Thomas F. Purdon, Save the Scenic Santa Ritas ("SSSR"), the Sky Island Alliance, David S. Steele, Arnold B. Urken, and Nan Stockholm Walden and Richard S. Walden (collectively, the "Appellants").[2]

18. At the hearing, with exception of the Center, all Appellants were represented by the same law firm and presented a single, unified case. These Appellants (i.e., all Appellants except the Center) are referred to as the "Shinsky Appellants."

19. The Center joined in the Shinsky Appellants' disclosures and arguments, including adopting the Shinsky Appellants' closing arguments, but also presented one independent witness.

20. On February 3, 2012, Appellants submitted to ADEQ joint written comments regarding the draft permit.[3] These joint comments were often referred to as

[2] James E. and Sherry M. Pepper, Sierra-Club-Grand Canyon Chapter, and Sonoran Institute were also appellants in this Docket, but on July 31, 2012, each withdrew their appeal.
[3] Ms. DeConcini signed the letter as Elizabeth Murfree, Vice President, Research Ranch Foundation.

the "Coalition Letter." Several of the Appellants also made oral comments at ADEQ's Public Hearing on January 5, 2012.

21. On April 3, 2012, ADEQ issued the Permit.

22. On May 9, 2012, Mr. and Ms. Shinsky filed with ADEQ their Notice of Appeal. On May 9 and 10, 2012 the other Appellants filed Notices of Appeal in which they joined the Shinskys' appeal.

23. The Shinskys raised 19 issues in their Notice of Appeal, which are set out in full below. None of the other Appellants raised any additional issues. Also, as discussed below, all 19 issues were not considered at the hearing.

24. When ADEQ transmitted the appeals to the Board, it considered the Shinskys' appeal and the joinders in that appeal to be one appeal with "16 joint appeals." The Board assigned the Shinskys' appeal and joinders Docket No. 12-004-WQAB.

25. On May 30, 2012, Rosemont filed with the Board a Notice of Intervention and its Answer to the Appellants' appeals.

26. On June 3, 2012, ADEQ filed with the Board its Answer to the appeals.

27. On June 14, 2012, the Board issued the Notice of Hearing.

The Aquifer Protection Permit Program[4]

28. The purpose or goal of the aquifer protection permit program is to protect the foreseeable use of groundwater as a drinking water source. The aquifer protection permit program works to achieve that purpose by reducing discharges[5] and ensuring that discharges do not cause exceedences of regulatory thresholds at the regulated facility's boundary.

29. Under the aquifer protection permit program an applicant must: (1) show that the design, construction, and operation of a facility will ensure the greatest degree of discharge reduction achievable through the use of Best Available Demonstrated

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[4] The information in this section is based primarily on the testimony of ADEQ's Jerry Smit and Maribeth Greenslade. Some of their testimony involved offering legal opinions or conclusions, and by recounting that testimony here, the ALJ is not necessarily adopting those legal opinions.

[5] "For purposes of the aquifer protection permit program ..., discharge means the addition of a pollutant from a facility either directly to an aquifer or to the land surface or the vadose zone in such a manner that there is a reasonable probability that the pollutant will reach an aquifer." A.R.S. § 49-201(12).

Control Technology ("BADCT");[6] and (2) show that the discharge of pollutants will not cause or contribute to a violation of the applicable Aquifer Water Quality Standards ("AWQS") or, in cases where the ambient water quality is in excess of the AWQS when a permit is issued, that the discharge of pollutants will not lead to further degradation of the aquifer.[7] A.R.S. § 49-243(B).

Compliance with BADCT

30. In addition to the applicable statutes and rules, ADEQ applied the "Arizona Mining Guidance Manual BADCT" (the "BADCT Manual" or the "Manual") in its evaluation of Rosemont's Application. The Manual provides standards and guidance for protecting groundwater under the aquifer protection permit program.

31. The BADCT Manual was developed in the late 1990s by a committee with personnel from ADEQ and the mining industry. TRC Environmental Solutions provided an independent review of the Manual. The BADCT Manual is a Substantive Policy Statement on file with the Arizona Secretary of State's Office.

32. Mine owners and operators are encouraged to design facilities in accordance with the BADCT Manual. If the Manual's criteria are met, an applicant will generally be found to have met the BADCT requirements, but ADEQ is not required to follow the Manual.

33. The Manual shows that to achieve BADCT, "mining facility owners and operators should use demonstrated discharge control elements utilized on an industry wide basis to limit or, where practicable, eliminate discharge to aquifers." Exhibit ADEQ 158 p.2 (PDF p. 16).[8]

Compliance with Aquifer Water Quality Standards

34. AWQS are set by rule at levels that protect reasonably foreseeable uses of groundwater. *See* A.A.C. R18-11-405 and R18-11-406.

35. An applicant for an aquifer protection permit is required to show that its discharges will not exceed the AWQS at a point (or points) of compliance ("POC")

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[6] Appellants in their closing arguments state that none of the issues raised by their appeal "directly relates to whether Rosemont's proposed facilities comply with BADCT."

[7] "'Aquifer Water Quality Standard' means a standard established under A.R.S. §§ 49-221 and 49-223." A.A.C. R18-9-101(5).

located at the down-gradient edge of the facility. AWQS are incorporated into aquifer protection permits[9] and monitoring at the POC is a permit requirement.

The Rosemont Project

36. Rosemont intends to construct an open-pit copper mine and associated processing facilities (the "Rosemont Project," the "Project," or the "Mine") on the east side of the Santa Rita Mountains, about 30 miles south of Tucson.

37. The Project is located over groundwater of the Cienega Creek groundwater basin in portions of Township 18 South, Range 15 and 16 East of the Gila and Salt River Baseline and Meridian.

38. The Project Site is located in the Helvetia and Rosemont mining districts and consists of patented and unpatented claims that cover most of those two mining districts.

39. Project operations include conventional crushing and floatation of sulfide ore to produce copper and molybdenum concentrate to be transported off site, heap leaching of oxide ore, and solution extraction/electrowinning facilities.

40. The Permit is a complex, individual permit. The Permit is an area-wide permit, meaning that it covers more than one discharging facility. These discharging facilities are encompassed within what is known as the pollutant management area ("PMA"). A PMA is formed by an imaginary line around the discharging activities at a permitted facility and is used by ADEQ to set the POC locations.[10]

41. Under the Permit, ADEQ authorized Rosemont to construct, operate, and maintain nine discharging facilities: (1) Dry Stack Tailings Facility ("DSTF"); (2) Primary Settling Basin; (3) Process Water Temporary Storage Pond; (4) Raffinate Pond; (5) Heap Leach Pad; (6) Pregnant Leach Solution Pond; (7) Storm Water Pond; (8) Waste Rock Storage Area ("WRSA"); and (9) Waste Management Area.

42. ADEQ's Solid Waste Division has authority over the Waste Management Area and that facility is not at issue in this matter. Because ADEQ's Solid Waste

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[8] The hard copy page numbering of exhibits does not always correspond with the computer generated "PDF" page numbers on the electronic copies of exhibits.

[9] As discussed below, this is accomplished by setting aquifer quality limits or "AQLs."

[10] "The pollutant management area is the limit projected in the horizontal plane of the area on which pollutants are or will be placed." A.R.S. § 49-244(1).

Division and Water Quality Division both have regulatory authority over a portion of the Permit, it is considered a "consolidated" permit.

The Discharging Facilities

Dry Stack Tailings Facility

43. The DSTF consists of two separate areas known as the North Stack and the South Stack. The South Stack (Phase 1) is designed to accommodate about 343 million tons of material and the North Stack (Phase 2) about 253 million tons.

44. The DSTF will receive filtered (dewatered) tailings from the tailings filter plant. The filter plant receives tailings slurry from the Copper-Molybdenum floatation circuit.

45. The Permit requires all tailings to be at less than 18% water by weight when placed in the DSTF.

46. The DSTF will receive tailings at a nominal rate of about 75,000 tons per day and the material will be stacked behind waste-rock buttresses.

Primary Settling Basin

47. The Primary Settling Basin receives stormwater and process-upset material consisting of unfiltered tailings (slurry) on a short-term basis.

48. The Primary Settling Basin has a surface area of about 8.5 acres, and a capacity of 61.4 million gallons with a minimum of 2-feet freeboard.

Process Water Temporary Storage Pond

49. The Process Water Temporary Storage Pond consists of two sections: the Process Water Pond and the Temporary Storage Pond.

50. The Process Water Pond is a double-lined surface impoundment that provides a minimum of 24-hours of storage capacity for the mineral processing circuit.

51. Water in the Process Water Pond consists of makeup water and process water, including potential overflow from the primary settling basin. The Process Water Pond also provides emergency storage for the other plant facilities.

52. The Process Water Pond has a capacity of 69.7 million gallons, including 2 feet of freeboard. The capacity to the freeboard line is 62.4 million gallons.

53. The Temporary Storage Pond is a single-lined surface impoundment that receives stormwater runoff and provides emergency overflow containment for the Process Water Pond.

54. The Temporary Storage Pond has a storage capacity of 38.1 million gallons, including 2 feet of freeboard. The capacity to the freeboard line is 34.2 million gallons.

Raffinate Pond

55. The Raffinate Pond is a double-lined surface impoundment.

56. Barren solution from the solution extraction/electrowinning plant is pumped to the Raffinate Pond and acidified. The solution is then pumped to the top of the heap leach pad.

57. The Raffinate Pond has a capacity of 3.6 million gallons with 3 feet of freeboard. The capacity to the freeboard line is 2.8 million gallons.

Heap Leach Pad

58. The Heap Leach Pad ("HLP") is located in the Barrel Canyon drainage (or wash).

59. The HLP liner system includes a prepared subgrade, a sodium bentonite geosynthetic clay liner with permeability equal to or less than 1×10^{-6} cm/second, and a 60-mil low density polyethylene geomembrane liner.

60. Run-of-mine oxide ore will be stacked in 30-foot lifts on the HLP and irrigated with raffinate using drip emitters. Ore can be stacked to a maximum of 450 feet above the liner.

61. Pregnant leach solution will gravity-drain from the HLP via perforated drain pipelines designed to route this solution to the Pregnant Leach Solution Pond.

Pregnant Leach Solution Pond

62. The Pregnant Leach Solution Pond is a double-lined surface impoundment. The Pregnant Leach Solution Pond receives pregnant leach solution from the HLP. The pregnant leach solution is then pumped to the solution extraction/electrowinning plant for processing.

63. The Pregnant Leach Solution Pond has a capacity of 22.8 million gallons with 3 feet of freeboard. The capacity to the freeboard line is 18.9 million gallons.

Storm Water Pond

64. The Storm Water Pond is a single-lined surface impoundment. The Storm Water Pond may contain stormwater runoff from the HLP and also any overflow from the Pregnant Leach Solution Pond during storms.

65. The Permit requires the Storm Water Pond to "typically" be empty during normal operating conditions.

66. The Storm Water Pond has a capacity of 31.6 million gallons with 3 feet of freeboard. The capacity to the freeboard line is 24.4 million gallons.

Waste Rock Storage Area

67. The WRSA is located in the Barrel Canyon drainage (or wash) and will receive waste rock (non-ore material) from the open pit. The footprint for the WRSA is 1370 acres and it is anticipated that it will hold about 756 million tons of waste rock.

68. The WRSA is not lined.

69. The Permit requires Rosemont to follow a materials testing program (waste rock segregation plan) to ensure that any potentially acid generating ("PAG") material is not located in areas that will come into contact with stormwater.

Waste Management Area

70. The Waste Management Area is a non-municipal solid waste landfill.

71. The Waste Management area is regulated by ADEQ's Solid Waste Division and is not at issue in this matter.

The Issues Raised in the Appellants' Notices of Appeal

72. The Shinskys' Notice of Appeal raised 19 issues, asserting the ADEQ had made an invalid technical judgment on each of those 19 issues. The other Appellants raised no issues independent of those raised by the Shinskys. Not all 19 issues were considered at hearing.

73. The 19 Issues raised by Appellants are:

> Issue 1: ADEQ made an invalid technical judgment by not establishing Alert Levels (ALs) and Aquifer Quality Limits (AQLs) in the 4/3/12 draft [Permit] and deferring establishment of such levels nearly two and a half years after the commencement of operations and the initiation of monitoring at the Point of Compliance (POC) wells, plus three months after the completion of such two-year monitoring program to submit the data to ADEQ,

plus an indeterminate time period for ADEQ to review the results and negotiate appropriate ALs and AQLs.[11]

Issue 2: ADEQ made an invalid technical judgment in its reliance on Rosemont's leaching and modeling data as a demonstration that infiltration, leaching, and seepage from the tailings facility and waste rock facility will not contaminate the aquifer.

Issue 3: ADEQ made an invalid legal and technical judgment when it did not properly or adequately calculate closure and post-closure costs. [No evidence was taken on this issue.]

Issue 4: ADEQ made an invalid technical judgment when it proposed to issue the [Permit], which governs specific "discharging facilities" under specific conditions, BEFORE the Forest Service's issuance of its [National Environmental Policy Act ("NEPA")] Record of Decision regarding the Mining Plan of Operations, which may significantly alter the operations described in Rosemont's [Permit] application and which may require significant alterations in the operational conditions described in the [Permit]. This is also a problem in issuing the [Permit] before final issuance of the Corps of Engineers 404 permit.

Issue 5: ADEQ made an invalid technical judgment by failing to prove that the "passive BADCT" for the mine pit, authorized under A.R.S. § 49-243(G), does not violate the standards in either A.R.S. § 49-243(B)(2) or (3), either of which applies. [No evidence was taken on this issue.]

Issue 6: ADEQ made an invalid technical judgment when it failed to describe fully and more appropriately and promptly contingency plans for foreseeable weather events and emergency responses, particularly applicable to local conditions rather than modeling. ADEQ also made an invalid technical judgment when it failed to establish placeholders for closure and post-closure planning based upon Rosemont's technical reports, rather than simply deferring any details until a closure notice is given.

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[11] "'Alert level' means a value or criterion established in an individual permit that serves as an early warning indicating a potential violation of a permit condition related to BADCT or the discharge of a pollutant to groundwater." A.A.C. R18-9-101(2).
"'AQL' means an aquifer quality limit and is a permit limitation set for aquifer water quality measured at the point of compliance that either represents an Aquifer Water Quality Standard or, if an Aquifer Water Quality Standard for a pollutant is exceeded in an aquifer at the time of permit issuance, represents the ambient water quality for that pollutant." A.A.C. R18-9-101(3). (Footnote added by ALJ.)

Issue 7: ADEQ made an invalid technical judgment by failing to articulate properly the design and other standards for the POC wells, as well as by failing to provide sufficient POC wells. [No evidence was taken on this issue.]

Issue 8: ADEQ made an invalid technical judgment when it failed to analyze fully the potential leakage problems for liners and adjust its mandatory conditions accordingly.

Issue 9: ADEQ made an invalid technical judgment by (a) failing to require Leak Collection and Recovery Systems for (i) the Temporary Storage section of the Process Water Storage Pond and for (ii) the Heap Leach Pad, and (b) failing to fully explain and impose sufficient design and testing requirements for the Leak Collection and Recovery Systems for (i) the Raffinate Pond and (ii) the Pregnant Leach Solution Pond.

Issue 10: ADEQ made an invalid technical judgment by failing to impose discharge limits at the point of discharge from the discharging facilities and failing to require monitoring at the point of discharge because once contaminants are discharged into the aquifer, the 4/3/12 draft [Permit] does not require cleanup if the discharges result in exceedances of the ALs and AQLs at the distant POC wells. Thus, such a discharge will permanently contaminate and degrade the aquifer.

Issue 11: ADEQ made an invalid technical judgment by failing to respond to all technical comments submitted during the comment period and by inaccurately summarizing and paraphrasing other comments.

Issue 12: ADEQ made an invalid technical judgment by failing to make an independent evaluation of the data supplied by Rosemont in support of its [Permit] application. There are no documents in the public file, as of 5/4/12, proving such an independent evaluation.

Issue 13: ADEQ made an invalid technical judgment in approving the location of a storm water drain that will mingle storm water and acid leach going to a dam that is not subject to BADCT. [Withdrawn prior to hearing.]

Issue 14: ADEQ made an invalid technical judgment when it did not consider the impact of groundwater discharges on surface waters and surface water quality because groundwater discharges will surface in springs and become surface discharges that will

adversely affect surface water quality. [Rosemont's Motion to Dismiss this issue was granted.]

Issue 15: ADEQ made an invalid technical judgment when it declined to anticipate the likelihood of damage and degradation to existing groundwater quality within the two-year monitoring period after ground-disturbance operations begin.

Issue 16: ADEQ made an invalid technical judgment when it assumed that the mine pit would forever remain a "sink" with no outflow of contaminants (because it was below groundwater level).

Issue 17: ADEQ made an invalid technical judgment when it declined to exercise discretion in recognizing that the statutory emergency standard of 100-year, 24-hour rain event was no longer valid for actual conditions. This is particularly problematic because failure as a result of an extreme event, without controls, will result in damage to listed Outstanding Waters (Cienaga Creek and Davidson Canyon).

Issue 18: ADEQ made an invalid technical judgment when it failed to apply more restrictive limits to the seepage discharge from the Heap Leach Facility. [No evidence was taken on this issue.]

Issue 19: ADEQ made an invalid technical judgment when it relied upon Rosemont's analysis of a dry stack tailings facility in Chile to prove BADCT worked at the Rosemont mine.

74. In Case Management Order No. 12, issued August 20, 2012, the ALJ granted Rosemont's Motion to Dismiss Issue 14 and no evidence was taken on that issue.[12]

75. Through the Shinsky Appellants' disclosure statement, Appellants withdrew Issues 5 and 13, and deferred prosecution of Issues 3, 7, and 18 to Pima County.

76. After Pima County was dismissed from the consolidated matter, the Appellants did not file any supplemental disclosure notice or request to revive the issues that they had deferred to Pima County and no evidence was presented on those Issues.

[12] Issue 14 was dismissed because Appellants did not raise that issue during the public comment period as required by A.R.S. § 41-1092.03(B).

77. In their presentation of evidence, the Appellants consolidated Issues 1 and 15; Issue 6 (first sentence) and Issue 17;[13] and Issues 8, 9, and 10.

78. In their Post-Hearing Legal Memorandum, which the Center joined, the Shinsky Appellants acknowledged that none of the issues raised by their appeal "directly relates to whether Rosemont's proposed facilities comply with BADCT. However ... where [we] question the design of particular facilities ... it is important to note that ADEQ is not required to follow the BADCT Manual...."

Jurisdictional Issues Raised by Rosemont

The Requirements of A.R.S. § 49-323(A)

79. In its closing argument, Rosemont argues that none of the Appellants meet the statutory requirements to bring an appeal of ADEQ's decision to grant the Permit.[14] Rosemont also argues that each Appellant bears the burden of proof to show that they meet this requirement.

80. A.R.S. § 49-323(A) provides that "any person who may with reasonable probability be adversely affected by the action" may appeal ADEQ's grant of an individual aquifer protection permit.

81. Although Rosemont acknowledges that the action at issue is ADEQ's decision to grant the Permit, Rosemont goes on to characterize this as meaning that the Appellants must show that the adverse effect is caused by "discharges authorized under the [Permit]." Rosemont's Closing Brief at pp. 15, 19, 21 (pollutants migrating to the Shinskys' property), 22 (potential discharges), 25, 28, 30, 31, 32, 33, 34, 35, and 37.

82. The Appellants argue that Rosemont's interpretation of the statute is too narrow, and that adopting such an interpretation would reduce the pool of appellants to "near zero," which cannot have been the legislative intent.

83. Appellants also argue that there is nothing in the applicable rule, A.A.C. R2-17-107 "Contents of a Notice of Appeal," nor in that rule's example appeal-form that requires any appellant to show it will be adversely affected.

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[13] The introduction to the Shinsky Appellants' disclosure statement shows that they were consolidating the second sentence of Issue 6 with Issue 17, and that they were deferring to Pima County the first sentence of Issue 6. The body of the disclosure statement shows however that the Shinsky Appellants intended to present evidence on the first sentence of Issue 6 and to defer on the second sentence. Evidence was taken on the first sentence of Issue 6, but not the second sentence.

Arizona Mining Reform Coalition's Status

84. Rosemont argues that because AMRC is an unincorporated association, it may not participate in legal proceedings, and as such, AMRC should be dismissed. The Shinsky Appellants take the position that Rosemont is wrong as a matter of law.

The Center for Biological Diversity/Coleman's Coralroot

85. Rosemont argues that the Center's evidence regarding the Coleman's Coralroot: (1) does not provide a basis on which standing can accrue because ADEQ does not have authority over plants; and (2) any such evidence should be barred because the Center did not raise the Coralroot in its written comments as required by A.R.S. § 41-1092.03(B) and § 49-323(A).

86. The Center asserts that the Coalition letter, which incorporated by reference written comments filed by the Sonoran Institute, and Mr. Serraglio's oral comments during ADEQ's public meeting are sufficient to show that the Center met the requirements of A.R.S. § 41-1092.03(B) and § 49-323(A).

Non-Testifying Appellants

87. Rosemont argues that the Coalition for Sonoran Desert Protection, the Sky Island Alliance, Mr. DeConcini, Mr. Kozma, and Mr. Purdon (the "non-testifying Appellants") did not appear at hearing and that there was no testimony or other evidence showing that each may with reasonable probability be adversely affected by the issuance of the Permit.

88. Contrary to Rosemont's assertion however, the non-testifying Appellants appeared at the hearing through their attorneys. And, with the exception of Mr. DeConcini, in their Responses to Rosemont's Motions to Dismiss, the non-testifying Appellants each provided information intended to show that they were reasonably likely to be adversely affected by ADEQ's issuance of the Permit.

89. The Shinsky Appellants argue that Rosemont did not consider judicial economy in that the non-testifying Appellants raised the same concerns in their appeals as were raised by other Appellants, and consequently that there was no need to take their testimony.

[14] Rosemont raised similar arguments in Motions to Dismiss that were denied prior to the hearing.

90. The Shinsky Appellants also assert that Ms. DeConcini was testifying on behalf of herself and Mr. DeConcini.

ADEQ's Position

91. ADEQ did not take a position on Rosemont's jurisdictional issue, and when Mr. Smit was asked about ADEQ's position, ADEQ invoked attorney client privilege. Mr. Smit did acknowledge however, that he knew of no instances where ADEQ had taken the position that an appellant was required to show that the discharges would cause them an adverse affect.

92. The Appellants argue that ADEQ's failure to challenge Appellants' right to appeal renders this issue moot and irrelevant. Likewise, Appellants argue that the Board's determination to set the matter for a hearing reflects an "implicit understanding" that the Appellants were qualified to appeal.

The Exhibits Taken into Evidence

93. Exhibits ADEQ 1-159 were admitted into evidence, some of which have multiple parts.

94. Exhibits PC 50, 78-87, and 98-99 were admitted into evidence. Exhibits CBD 1-12 were admitted into evidence. Exhibits Rosemont 6, 8-9, 11, 15, 24, 40, 44, 47, 65-66, 79, 81, 90, 130, 134, 138-144, and 147-151 were admitted into evidence, some of which have multiple parts. Exhibits Shinsky Appellants 13, 23, 26, 44, 47-49, 51-54, 56 and 57 were admitted into evidence.

The Witnesses at Hearing

Credibility of the Witnesses and Probative Value of the Testimony

95. All witnesses provided credible testimony. The reliability, weight, and probative value of the testimony must, however, be considered in light of each witness's knowledge of the issue under consideration.

96. At times witnesses provided testimony that called for interpretation of statutes or rules. With the possible exception of testimony about ADEQ's interpretation of the statutes and rules, legal opinions can be given no weight.

The Appellants' Witnesses

Randy Serraglio

97. The Center presented the testimony of Mr. Serraglio, who is the Center's southwest conservation advocate. Mr. Serraglio testified as a fact witness, not as an expert.

98. Mr. Serraglio testified as to the Center's mission and organizational make-up and provided testimony offered to show that the Center's members may be adversely affected by ADEQ's issuance of the Permit.

99. The Center is a non-profit conservation organization with headquarters in Tucson, Arizona. Many of its members visit and recreate in the area of the Santa Rita Mountains, which Mr. Serraglio referred to as the "Sky Island region."

100. The Center works to protect threatened and endangered species and their habitats. The Center has petitioned the Environmental Protection Agency in an effort to obtain such protection for the Coleman's Coralroot.

101. Coleman's Coralroot grows in McCleary Canyon, which Mr. Serraglio testified is in the footprint of the Rosemont Mine.

102. According to Mr. Serraglio, observing the Coleman's Coralroot is one of the reasons the Center's members come to the area. The Coleman's Coralroot is a mycoheterotroph, which according to Mr. Serraglio is "essentially" an orchid.

103. The Coleman's Coralroot gets its nutrients from a fungus that itself grows on the roots of white oak trees growing in McCleary Canyon.

104. Mr. Serraglio testified as to his understanding that the white oak trees in McCleary Canyon use groundwater. Mr. Serraglio did not know the depth to groundwater in that area.

105. Mr. Serraglio testified that the Permit authorizes Rosemont to make discharges near McCleary Canyon, upslope from where Mr. Serraglio has observed the Coleman's Coralroot. Mr. Serraglio specifically identified the DSTF, the Primary Settling Basin, the Waste Management Area,[15] and the Process Water Temporary Storage Pond as being discharging facilities in the area. On cross-examination, Mr. Serraglio

[15] As set forth above, the waste management area is not at issue in this matter.

acknowledged that he had relied on the latitude and longitude values in the Permit and he had not consulted maps showing the locations of these facilities.

106. Mr. Serraglio also testified that 11 of the Center's members reside in the service areas of water companies located in the area of the Rosemont Mine, and that other members in this area have private wells. When asked, Mr. Serraglio declined to name any of those members. Mr. Serraglio acknowledged that the closest of these water providers' service areas was 14 or 15 miles from the Rosemont Project site.

Gayle Hartmann

107. Ms. Hartmann testified as a fact witness, not as an expert.

108. Ms. Hartmann lives in Tucson and testified on behalf of the SSSR. Ms. Hartmann is president of SSSR, which she said leads the opposition to the Mine. The SSSR's mission is to protect the Santa Rita and Patagonia Mountains from the environmental impacts of mining.

109. According to Ms. Hartmann, about 95 organizations (e.g., small businesses, home owners' associations, political groups) comprised of about 80,000 people have "endorsed" SSSR. SSSR is not a membership group in that there are no dues paid, but by endorsing SSSR, Ms. Hartmann means that they have signed paperwork showing that they support SSSR's mission. SSSR does have a board of directors and an advisory board.

110. Some of the Appellants are endorsers/members of SSSR.

111. Some of the SSSR's endorsers/members live in the area of the Rosemont Mine, own businesses in the Sonoita-Patagonia area, and engage in recreation including hiking and camping in the area.

112. Ms. Hartmann testified that there are SSSR endorsers/members living within a few miles of the Mine that are concerned about contamination of their wells and the possibility that this could lead to an inability to sell their land or homes.

113. According to Ms. Hartmann, the Arizona Game and Fish Department has expressed concern about the potential for an adverse impact on wildlife if seeps and springs were to become polluted.

114. Ms. Hartmann expressed the opinion that ADEQ did not provide enough detail in its response to the public comments, but she provided no specific examples in support of that opinion.

Richard Walden

115. Mr. Walden testified as a fact witness, not as an expert.

116. Mr. Walden lives in Amado and his business headquarters is located in Sahuarita.

117. Mr. Walden engages in recreational activities in the Santa Rita Mountains and he and his wife (appellant Nan Walden) own a ranch that has grazing land in the foothills. Mr. Walden acknowledged that this land was "quite a ways" from the Rosemont Site.

118. Mr. Walden's family is one of the owners of Farmers Investment Company ("FICO"), which grows pecans in the Santa Cruz Valley. FICO also owns the Farmers Water Company that provides drinking water to FICO's employees and has 2,500 public connections in the Santa Cruz valley. The Santa Cruz Valley is on the west side of the Santa Rita Mountains.

119. Mr. Walden expressed his concern that the Mine might create groundwater contamination. Mr. Walden based this concern, at least in part, on his understanding that other mines have created groundwater contamination.

120. Mr. Walden's opinion is that FICO's pecan trees would not survive with contaminated groundwater, and that contaminated groundwater would have an adverse affect on the tourism industry in the region.

121. Mr. Walden expressed the opinion that ADEQ did not respond to all Appellants' comments, but he provided no specific examples.

Carol Shinsky

122. Ms. Shinsky testified as fact witness, not as an expert.

123. Ms. Shinsky and her husband Gregory C. Shinsky live in Vail, Arizona about three miles from the entrance to the Rosemont Mine. Their home is about 5 or 6 miles from the proposed Mine pit and discharging facilities. Ms. Shinsky testified as to both her and her husband's concerns.

124. The Shinskys took the lead role for Appellants in this matter because, of those involved, they live closest to the Mine and, because they are retired, they have the time necessary to take on that role.

125. The Shinskys have lived in their home for about 15 years and they would not have moved there had they known a mine was about to be built. Ms. Shinsky did not recall any disclosures being made when they purchased their land.

126. The Shinskys' home is located approximately 3,000 feet east of Davidson Canyon, which is a major wash that generally runs north along Highway 83 and crosses Interstate 10 near Vail.

127. The Shinskys have a private well that is about 400 feet deep. Ms. Shinsky is concerned that their well could become contaminated with whatever runs off the Mine.

128. According to Ms. Shinsky, the Shinskys' well is about 300 feet deeper than the surface of Davidson Canyon, by which she meant that the well is down gradient of the Canyon.

129. Ms. Shinsky did not know the direction of groundwater flow under her property. Based on her reading of expert reports, she is of the opinion that their well could become contaminated, but she could not name any of the experts she was relying on for this information.

130. Ms. Shinsky was concerned that any groundwater contamination would adversely affect the wildlife, property values, and the health of people living in the area. She is concerned that this would also adversely affect tourism and the related economy in the area.

131. Ms. Shinsky's opinion is that ADEQ did not adequately respond to the public comments submitted in this matter. In particular, she testified that she did not believe ADEQ had adequately addressed her concern about who will monitor the groundwater and clean up any contamination if there are discharges after the Mine closes.

Roger Featherstone

132. Mr. Featherstone testified as a fact witness, not as an expert.

133. Mr. Featherstone testified on behalf of the AMRC, which is an organization of 12 member organizations and about 500 individuals. Most of its members live in Arizona. The AMRC is not incorporated, is not an LLC, and is not a partnership.

134. The member organizations form a steering committee that directs Mr. Featherstone's activities. The AMRC's fiscal sponsor is Earthworks, which also pays Mr. Featherstone a salary.

135. AMRC's mission is to protect the environment and Arizona's communities from inappropriate mining. AMRC is not opposed to responsible mines and it expects mines to clean up after themselves and that mining will be a net benefit to the State.

136. AMRC has members that recreate in the Santa Rita Mountains. Some members have businesses based on tourism in the Mountains and if the Mine were to negatively affect tourism, these businesses would suffer. The concerns are water quality issues, and how that would affect recreation if the ecosystem goes "dead." According to Mr. Featherstone, some coalition members, including him, derive spiritual sustenance from the Mountains.

137. The Shinskys are AMRC members, and as far as Mr. Featherstone knew, none of the other members lived closer to the Mine than the Shinskys. He was of the opinion however that other members live within 10 miles or so of the Mine.

138. Mr. Featherstone's opinion was that ADEQ did not adequately respond to the public comments in this matter, but he did not provide any specific details.

Elizabeth Murfee DeConcini

139. Ms. DeConcini testified as a fact witness, not an expert.

140. Ms. DeConcini and her husband, appellant Dino J. DeConcini, live in Tucson.

141. Ms. DeConcini is concerned that potential groundwater contamination could affect the area near the Mine and the Las Cienegas National Conservation Area and Sonoita plains that are to the south and southeast of the Mine.

142. Ms. DeConcini filed her appeal on her own behalf, but she is a member of the Cienega Watershed Partnership and the Empire Ranch Foundation, both of which are part of the Las Cienegas National Conservation Area. She was formerly on the

Board of the Research Ranch Foundation that provides advice on the management of the Appleton-Whittel Research Ranch near Sonoita.

143. Through her work with these groups, Ms. DeConcini spends time in the Las Cienegas National Conservation Area, which she finds to be restorative to her well being.

Stanley Hart, Ph.D.

144. Dr. Hart testified as a fact witness as an Appellant and as an expert witness for Appellants. Exhibit Shinsky 49 is Dr. Hart's curriculum vitae.

145. Dr. Hart lives in Green Valley, Arizona, about 8 miles from the Mine Site "as the crow flies." Dr. Hart hikes in the Santa Rita Mountains and runs in the University's experimental range on the west side of those mountains.

146. Dr. Hart is concerned about the potential for groundwater contamination and the impact that any such contamination might have on his recreational activities.

147. In 1960, Dr. Hart received his Ph.D. in geochemistry, which is his general area of expertise. Dr. Hart is an isotope geochemist and one of his main areas of research is rock/water interactions.

148. Dr. Hart describe himself as "nominally" retired. He is a Scientist Emeritus at the Woods Hole Oceanographic Institute, and he is involved in several research projects with colleagues from Woods Hole. Dr. Hart has held a number of teaching and research positions and is the author of over 200 peer reviewed papers.

149. Dr. Hart's expert opinions were related to the leach testing (material characterization) work conducted by Rosemont. Dr. Hart testified that although his professional work involved different rocks and different water[16] than that at issue in this matter, the chemistry is the same and his knowledge of the fundamental principles of rock/water interactions allowed him to understand the issues in this matter.

150. Dr. Hart's opinions are presented below in the sections addressing the specific issues on appeal.

Tom Myers, Ph.D.

151. Dr. Myers testified as an expert witness. Exhibit Shinsky 47 is Dr. Myers's curriculum vitae.

152. In 1996, Dr. Myers received his Ph.D. in hydrology/hydrogeology, which is his area of expertise. Dr. Myers has work experience as a design engineer, a hydraulic engineer, a teaching and research assistant, the Executive Director of the Great Basin Mine Watch, and a hydrologic consultant. He has experience in groundwater modeling, including modeling seepage in waste rock and tailings piles, and in review of regulatory permits.

153. Dr. Myers is the lead author on 14 peer reviewed papers. Dr. Myers has testified as an expert before the Nevada State Environmental Commission and in water rights hearings before the Nevada State Engineer, including a recent hearing in which some of his testimony was related to a groundwater model he wrote.

154. In 2007, Dr. Myers began working for Pima County on issues related to the Rosemont Mine and he was retained by the Appellants about a month before the hearing.

155. Dr. Myers's opinions are presented below in the sections addressing the specific issues on appeal.

Arnold Urken, Ph.D.

156. Dr. Urken testified as a fact witness as an Appellant and as an expert witness for Appellants. Exhibit Shinsky 48 is Dr. Urken's curriculum vitae.

157. Dr. Urken lives in Green Valley, Arizona, about 15 to 20 miles from the Mine on a direct line, but about 40 to 45 miles driving.

158. As a personal concern, Dr. Urken was of the opinion that foreseeable combinations of low probability events could cause failures at the Mine that could lead to the aquifer being damaged. This could then affect property values and the community such that the current way of life would be untenable.

159. Although not an expert in weather or meteorology, Dr. Urken was concerned that there have been rainfall events larger than the 100-year 24-hour storm event that was analyzed by Rosemont. Dr. Urken was not aware of whether the "1983 storm" had been considered in Rosemont's modeling.[17]

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[16] Dr. Hart's work has been primarily with seawater.

[17] A number of witnesses testified about a large storm that occurred in 1983.

160. Dr. Urken was of the opinion that ADEQ had not adequately responded to the comments he submitted in response to the draft permit. Dr. Urken's comments were related to his concern that ADEQ had not adequately considered the reasonably foreseeable events that may occur at the Mine.

161. In 1973, Dr. Urken received his Ph.D. in political science. Dr. Urken has held several teaching positions, including one at the Stevens Institute of Technology that teaches engineering as a systems approach to problem solving. He is currently a research professor in the Department of Civil Engineering and Engineering Mechanics at the University of Arizona.

162. Dr. Urken's area of expertise is analysis of systems engineering and network decision making. His work has involved analysis of reasonably foreseeable manmade and natural events.

163. Dr. Urken has worked on projects including the analysis of computer networks and the prevention of cascading failures of electrical grids, and he has published about 40 peer reviewed papers.

164. Dr. Urken's opinions are presented below in the sections addressing the issues on appeal.

David Steele

165. Mr. Steele testified as a fact witness, not as an expert.

166. Mr. Steele lives in northeast Pima County.

167. Mr. Steele is on the Board of the Empire Ranch Foundation, a non-profit organization that supports the Las Cienegas National Conservation Area. The Empire Ranch is located east and south of the Mine Site and Mr. Steele generally enjoys the beauty of that area.

168. Mr. Steele believes that the Mine threatens the area's water resources and that there is a potential for contamination to leach into the groundwater.

169. Mr. Steele receives his drinking water from the City of Tucson and, to the best of his knowledge, that water is pumped from the aquifer in the Tucson basin. Mr. Steele's understanding is that 20 percent of the water in the Tucson basin comes from the Cienega Creek watershed. Mr. Steele acknowledged that he did not know how close to that watershed the City of Tucson wells are.

170. Mr. Steele acted as Appellants' recorder (albeit, informally) while their comments (i.e., the Coalition letter) were being drafted. Mr. Steele does not believe that ADEQ answered all of Appellants' comments in its Response to the public comments or that the Permit addresses the concerns raised by the Appellants.

171. The Appellants' Appeals were filed in response to the perceived failure of ADEQ to adequately respond to their comments. Mr. Steele's opinion was that Appellants filed joint appeals because it was cost-effective and eliminated redundant appeals.

172. Mr. Steele was living in Tucson during the large storm of 1983, which covered much of the region.

Nan Stockholm Walden

173. Ms. Walden testified as a fact witness, not as an expert.

174. Ms. Walden is vice president and in-house counsel for FICO and Famers Water Company; at one time she was counsel to the U.S. Senate Committee on environment and public works. She is not a member of the Arizona Bar and was not testifying in the capacity of an attorney.

175. Ms. Walden has served in a number of environmental organizations in Southern Arizona including the Sonoran Institute and the Arizona Nature Conservancy.

176. The Waldens' ranch generally extends south from Amado and east to the Mount Wrightston wilderness area.[18] The corporate headquarters are located at Sahuarita Road and Nogales Highway (in Sahuarita). There are four large mines in this general area: Sierrita, Twin Buttes, Mission, and Pima.

177. At one time Ms. Walden was FICO's representative to the Citizens Advisory Group that was formed to address the sulfate plume at the Sierrita mine. Based on her experience with the Sierrita mine, she is concerned about groundwater quality.

178. Ms. Walden expressed concern that the area's business economy could suffer if there is uncontrolled groundwater contamination.

179. Ms. Walden agreed that the Sierrita sulfate plume was from a mine constructed 40 or 50 years ago. Although Sierrita now has an aquifer protection permit,

her belief is that the four local mines were developed before the institution of the environmental protection programs that now exist.

180. Ms. Walden and her family engage in a number of activities on the east side of the Santa Ritas, including hiking, riding, and birding. Ms. Walden expressed concern that these activities could be compromised if there is inadequate groundwater protection at the Rosemont Mine Site.

181. Ms. Walden's opinion is that ADEQ should not have issued the Permit until the uncertainties associated with the other permits that Rosemont must obtain are cured (e.g. NEPA). This was the approach taken by the Arizona Corporation Commission and the Pima Association of Governments.

182. Ms. Walden testified as to the storm of 1983, but she was relying on the accounts of others. It is her opinion that there can be large storms that stay over the area for a long time.

183. Ms. Walden did not believe that ADEQ responded to the Appellants' comments in its Response or in the Permit itself. Ms. Walden testified about some of the concerns or issues she raised in the comments, but she did not testify as to how ADEQ's response failed to adequately address those concerns.

Rosemont's Witnesses

Karen Herther, R.G.

184. Ms. Herther testified as an expert witness and provided factual testimony based on her knowledge of the Rosemont Project and the aquifer protection permit program. Ms. Herther is a registered geologist in Arizona. Exhibit Rosemont 147 is Ms. Herther's curriculum vitae.

185. Ms. Herther is Rosemont's Water Resources Superintendent and she previously owned Kimberlite Water Quality Permitting and Compliance Services, LLC, which provided consulting services to Rosemont while the Application was pending. Ms. Herther is a hydrogeologist who has worked for consulting firms and in ADEQ's Mining Unit. Ms. Herther's professional experience includes preparing applications for aquifer protection permits, overseeing POC wells, and fate and transport demonstrations.

[18] The ranch includes leased lands.

186. Through her testimony, Ms. Herther provided an overview of the Rosemont Project and the site's geology, the construction schedule, modeling that was done for Rosemont, and the aquifer protection permit program.

187. The substance of Ms. Herther's testimony is presented in the sections relating to the specific issues raised by Appellants and in the sections providing background information about the Rosemont Project.

Mark Williamson, Ph.D.

188. Dr. Williamson testified as an expert witness and provided factual testimony based on his knowledge of the Rosemont Project. Exhibit Rosemont 104 is Dr. Williamson's curriculum vitae.

189. Dr. Williamson is an Environmental Geochemist for Geochemical Solutions, LLC, which is his own firm. Dr. Williamson formerly worked for Tetra Tech, which conducted leach testing, material characterization, and other work for Rosemont.

190. In 1992, Dr. Williamson received his Ph.D. in geochemistry.

191. Dr. Williamson has 25 years of experience as an environmental geochemist, and he has been involved in geochemical analysis of mine waste in over 23 mining projects, including evaluation of acid rock drainage and geochemical characterization of mine waste. Dr. Williamson's work is often done in the context of water quality regulations.

192. The state of Virginia hired Dr. Williamson as part of a team to conduct a comparative analysis of state regulatory guidance that included Arizona. Based on that analysis, Dr. Williamson's opinion is that Arizona's "BADCT guidance documents rate very high" and include all topics that a professional would expect to see and, with one exception, presented these more clearly and in a more focused manner than the other states.

193. Dr. Williamson testified about the leach testing and material characterization work. The substance of his testimony is presented in the sections relating to the specific issues raised by Appellants.

Amy Hudson, REM

194. Ms. Hudson testified as an expert witness and provided factual testimony based on her knowledge of the Rosemont Project. Exhibit Rosemont 6 is Ms. Hudson's curriculum vitae.

195. Ms. Hudson is a registered environmental manager who is a Senior Hydrogeologist and Geochemist for Tetra Tech.

196. Ms. Hudson has worked on numerous mining projects in the United States and other countries. Her professional work experience includes evaluating "drain down" or seepage from waste rock piles, heap leach facilities, and tailings impoundments; geochemical analysis and material characterization; providing oversight and quality assurance; design of dewatering systems; and fate and transport modeling.

197. Ms. Hudson has been working on the Rosemont Project since 2006, during which time she has worked as a geochemist and on the infiltration, seepage, and fate and transport modeling. Ms. Hudson testified about those issues.

198. The substance of Ms. Hudson's testimony is presented in the sections relating to the specific issues raised by Appellants.

Grady O'Brien, R.G.

199. Mr. O'Brien testified as an expert witness and provided factual testimony based on his knowledge of the Rosemont Project. Mr. O'Brien is a hydrogeologist who is a registered geologist in Arizona, Washington, and Wyoming. Exhibit Rosemont 9 is Mr. O'Brien's curriculum vitae.

200. Mr. O'Brien is a Senior Hydrologist for Engineering Analytics, Inc. Mr. O'Brien was formerly employed by Tetra Tech as the project manager and lead hydrogeologist on the 3-dimensional regional groundwater model prepared for the Rosemont Project.

201. Mr. O'Brien has over 25 years of experience in hydrogeologic characterization and modeling. Hydrogeologic characterization involves determining a site's geologic condition and describing the processes that would affect groundwater flow at that site. During that time, Mr. O'Brien's professional experience includes

groundwater sampling, well drilling, site characterization, groundwater remediation, groundwater modeling, and aquifer testing,

202. Mr. O'Brien testified about the groundwater model and about groundwater conditions at the Rosemont Site. The substance of his testimony is presented in the sections relating to the specific issues raised by Appellants.

Troy Meyer, P.E.

203. Mr. Meyer testified as an expert witness and provided factual testimony based on his knowledge of the Rosemont Project. Mr. Meyer is registered as a professional engineer in Arizona, seven other states, and several Canadian provinces. Exhibit Rosemont 8 is Mr. Meyer's curriculum vitae.

204. Mr. Meyer is a Principal Geotechnical Engineer for Tetra Tech.

205. Mr. Meyer has extensive experience in the design and engineering of liner systems at mine facilities throughout the world. Mr. Meyer estimated that he had worked on about 100 mining projects, including designing and engineering facilities in Arizona utilizing the BADCT Manual.

206. At the Rosemont Project, Mr. Meyer was involved in site characterization studies, facility siting studies, alternatives analysis for the HLP and tailings facilities, geotechnical borings, and advanced engineering for the facilities.

207. Mr. Meyer provided testimony about geotechnical work performed at the site, engineering and construction issues at the Project, the liner at the HLP, and compliance with the BADCT requirements. The substance of his testimony is presented in the sections relating to the specific issues raised by Appellants.

ADEQ's Witnesses

Jerry Smit, R.G.

208. Mr. Smit is the Manager of the Groundwater Section of the Water Quality Division at ADEQ. In that role, he is responsible for approving and granting aquifer protection and other permits.

209. Mr. Smit has been employed at ADEQ for over 20 years and is a registered geologist in Arizona.

210. Mr. Smit provided testimony about the aquifer protection permit program generally and ADEQ's processing of Rosemont's Application.

211. ADEQ disclosed Mr. Smit as a fact witnesses, not an expert, and Mr. Smit provided no expert opinions during the hearing.

212. The substance of Mr. Smit's testimony is presented in the sections relating to the specific issues raised by Appellants and in the sections providing background information about the aquifer protection permit program and the Rosemont Project.

Maribeth Greenslade, P.E.

213. Ms. Greenslade is a Senior Environmental Manager for ADEQ and she was the Manager of ADEQ's Technical Support Unit during the time Rosemont's Application was being processed.

214. Ms. Greenslade has worked for ADEQ since 2006 and was also employed there from 1992 to 1998. Ms. Greenslade is a registered professional engineer in Arizona.

215. Ms. Greenslade provided testimony about the aquifer protection permit program and ADEQ's processing of Rosemont's Application.

216. ADEQ disclosed Ms. Greenslade as a fact witnesses, not an expert, and Ms. Greenslade provided no expert opinions during the hearing.

217. The substance of Ms. Greenslade's testimony is presented in the sections relating to the specific issues raised by Appellants and in the sections providing background information about the aquifer protection permit program and the Rosemont Project.

Jeff Emde

218. Mr. Emde is a Hydrologist III or senior hydrologist with ADEQ.

219. Mr. Emde has worked for ADEQ for over 19 years, for most of which he has been a Hydrologist III. Mr. Emde is responsible for reviewing the hydrologic portions of aquifer protection permit applications, and he conducted the hydrology review of Rosemont's Application.

220. Mr. Emde's testimony was primarily about his role in ADEQ's review of Rosemont's Application.

221. ADEQ disclosed Mr. Emde as a fact witnesses, not an expert, and Mr. Emde provided no expert opinions during the hearing. He did, however, rely on his expertise during his review of the Application.

222. The substance of Mr. Emde's testimony is presented in the sections relating to the specific issues raised by Appellants.

Issues 1 and 15 – Alert Levels and Aquifer Quality Limits

Alert Levels and Aquifer Quality Limits

223. Under the aquifer protection permit program, the discharge of pollutants may not cause or contribute to a violation of the applicable AWQS. A.R.S. § 49-243(B)(2). An exception exists in cases where the ambient water quality is in violation of the AWQS when a permit is issued. In those cases, the discharge of pollutants may not lead to further degradation of the aquifer. A.R.S. § 49-243(B)(3).

224. Alert Levels ("AL") and Aquifer Quality Limits ("AQL") are permit conditions designed to ensure compliance with A.R.S. § 49-243(B)(2) or (B)(3), whichever subsection is applicable.

225. ALs are set at 80% of the AWQS level unless the ambient groundwater already exceeds 80% of the AWQS. AQLs are set at the AWQS level, unless the AWQS is exceeded at the time the aquifer protection permit is issued, in which case the AQLs are set at the ambient water quality level.

226. Compliance with the ALs and AQLs is measured at POC wells. Exceeding an AL at a POC well is not a permit violation, but will trigger the need to implement the permit's contingency plan. Exceeding an AQL at a POC well is a permit violation. It is not a permit violation to exceed an AQL inside the PMA.

The Permit Requirements

227. The Permit requires Rosemont to install a total of eight POC wells that must be completed within one year of the Permit's issuance.

228. The ambient water quality at Rosemont's POC well locations was not known as of the hearing dates.

229. A.A.C. R18-9-A211(C)(7) provides that ALs and AQLs can be calculated and added to an aquifer protection permit after the permit has been issued.[19]

[19] "The Director shall make a minor amendment to an individual permit to: .... Insert calculated alert levels, AQLs, or other permit limits into a permit based on monitoring subsequent to permit issuance, if a requirement to establish the levels or limits and the method for calculation of the levels or limits was established in the original permit."

230. The Permit does not specify the applicable ALs or AQLs, but rather provides that these will be set after Rosemont conducts eight rounds of quarterly groundwater monitoring to determine the ambient water quality at the POC wells.

231. The Permit sets forth the formulas by which the ALs and AQLs will be calculated after the required groundwater data is obtained.

232. After the ALs and AQLs are established, the Permit will be amended to include these values. ADEQ's position is that adding the ALs and AQLs to the Permit is a minor amendment as defined in rule. Consequently, there will be no public notice and no public participation in that process.

233. During the time the groundwater monitoring is being conducted, Rosemont is allowed to begin constructing the regulated facilities and other infrastructure, including roads at the Project Site.

234. In their Appeals, Appellants assert that ADEQ made an invalid technical judgment by its failure to establish the ALs and AQLs in the Permit and by its failure to anticipate the likelihood that the allowed construction activities would degrade the existing groundwater quality.

Mr. Emde's Testimony on Issues 1 and 15

235. Mr. Emde was involved in ADEQ's decision about how and when the ALs and AQLs would be established.

236. Rosemont is allowed to construct and operate during the two years in which the groundwater monitoring is ongoing, which is typical for aquifer protection permits. In order to do it differently, Rosemont would have had to know the location of the PMA and the POC wells and to have completed two years of groundwater monitoring before it applied for the Permit.

237. Mr. Emde was not aware of any aquifer protection permits issued for mining activities in which the ALs and AQLs were set before the permit was issued. Mr. Emde did not have enough familiarity with aquifer protection permits for other types of activities to give an opinion about when the ALs and AQLs are typically set for those permits.

238. Mr. Emde agreed with ADEQ's decision to set the ALs and AQLs as it did and his opinion[20] was that there will not be any significant impact to the water quality at the POC wells during the two-year groundwater monitoring period.

239. Mr. Emde based his opinion on several factors including the small size of the facilities' footprints during the monitoring period, the distance from the facilities to the POC wells, the groundwater flow velocity, and how ALs and AQLs are set.

240. Relying on information in the Regional Groundwater Flow Model prepared by Tetra Tech (November 2010), which is Exhibit ADEQ 102, Mr. Emde estimated that the groundwater velocity at the Project Site is between 45 to 70 feet per year.

241. During the monitoring period, the WRSA and the DSTF will be 2,000 feet and 500 feet from the POCs wells, respectively. Consequently, according to Mr. Emde, any contamination that enters the groundwater would not reach the POC wells during the two-year groundwater monitoring period. In his calculation, Mr. Emde did not consider the time required for any contamination to get into the groundwater itself, which adds a factor of safety to his analysis.

242. Mr. O'Brien (the hydrogeologist) was also of the opinion that groundwater could not travel from the discharging facilities to the POCs wells during the two-year groundwater monitoring period.

243. Because the ALs are set at 80% of the AWQS, Mr. Emde's opinion was that any contamination that occurs during the two-year groundwater monitoring period would only have an effect on the ALs if that contamination was sufficient to increase ambient conditions to over 80% of the AWQS (at the POC wells). Similarly, the AQLs would not be affected unless the contamination is sufficient to increase the ambient levels to values greater than the AWQS.

Dr. Chambers's Testimony on Issues 1 and 15

244. Dr. Chambers's opinion is that during the two-year groundwater monitoring period activities such as exploratory drilling, construction processes to expose the ore, and road construction all have the potential to impact groundwater

[20] As set forth above, Mr. Emde was a fact witness, not an expert witness. However, during his review of Rosemont's Application, Mr. Emde formed opinions using his technical expertise.

quality. Of these activities, Dr. Chambers considered the greatest risk to come from the construction processes to expose the ore.

245. Dr. Chambers acknowledged that he was not testifying that specific things would occur at the Project Site, but rather he was raising concerns about the types of things that could occur at a mining project.

246. Dr. Chambers did not know the distance from the POC wells to the locations of the pre-mining construction activities; he had not done any fate and transport analyses; he did not evaluate the hydraulic conductivity or groundwater flow rates; nor did he do any assessment of the Mine Site's geology.

247. Dr. Chambers had little or no site specific information about the Rosemont Project and he based his opinions on his knowledge of sulfide ore bodies generally. Based on that experience, Dr. Chambers felt that he could say with some certainty that there will be contamination from the overburden material that might be used to construct roads. But Dr. Chambers acknowledged that he could not say how fast, or to where, the contamination would travel. Consequently, he did not know if any contamination could reach a POC well during the two-year groundwater monitoring period.

248. Dr. Chambers was not aware that Rosemont's Application shows that it has an Arizona Pollution Discharge Elimination System multi-sector general permit that regulates construction activities.

249. Dr. Chambers had no prior experience with aquifer protection permits and had not read the rules pertaining to aquifer protection permits.

250. Dr. Chambers acknowledged that ADEQ is required to follow the applicable statutes, regulations, and policies, and Dr. Chambers was not suggesting that ADEQ not do so. But his opinion was that ADEQ has the statutory authority to require "best practices" that go beyond what the law specifically requires.

Ms. Herther's Testimony on Issues 1 and 15

251. Activities during the two-year groundwater monitoring period will include road building and construction of the plant site, including building buttresses for the DSTF and WRSA.

252. Ms. Herther testified that the buttresses will be constructed using inert waste rock and that potentially acid generating rock will not be used to construct the roads.

253. The WRSA buttresses will be used as haul roads that will be engineered to have rainwater drain toward stormwater ditches.

254. Before the facilities are constructed, Rosemont will scrape the soil down to bedrock and then stockpile that soil for reclamation use. Consequently, Ms. Herther was of the opinion that any rain water that did seep through the buttresses during the two-year monitoring period would hit the exposed bedrock and run off as sheet flow into the stormwater impoundments.

Dr. Myers's Testimony on Issues 1 and 15

255. Dr. Myers's opinion is that the method by which the ALs and AQLs will be calculated is sound, but he did not agree that it was appropriate to allow construction activity at the Mine Site during the two-year groundwater monitoring period.

256. While the groundwater monitoring is ongoing, the waste-rock buttresses will be only about 50 feet thick, not 300 to 400 feet as will be the case when the Mine is in operation. Consequently, stormwater falling on those buttresses during the two-year groundwater monitoring period will not have a long path to travel before seeping into the ground. Because of this, Dr. Myers's opinion was that it is very possible that contamination might reach the POC well locations before the two years of groundwater monitoring is completed.

Ms. Greenslade's Testimony on Issues 1 and 15

257. Neither the statutes nor the rules require ambient groundwater monitoring to be completed before an aquifer protection permit issues.

258. Rosemont's Permit is typical of most aquifer protection permits in that the POC wells are not installed until after the permit has been issued.

Preferential Flows

259. "Preferential flows" are flows that occur at a rate faster than the average flow rate through an area.

260. Appellants argue that there may be fractures (or faults) in the Project area that would allow any contamination to flow to the POC wells more quickly than the average rate of groundwater flow, which is what Mr. Emde calculated.

261. Mr. Emde did not see any evidence of faults that would affect his groundwater flow-rate calculations.

262. Mr. O'Brien testified that the hydrogeologists look for evidence of fractures or preferential flow paths and that they had not seen any evidence that any exist in the Santa Rita Mountains.

263. Mr. O'Brien testified that because no soil borings have been placed near the POC wells, there is currently no way to know if factures exist in those areas. Mr. O'Brien also testified however, that there is no evidence of fracturing at wells that are near the POC well locations and, that to a reasonable degree of scientific certainty, during the groundwater monitoring period there is no risk to the POC wells.

Conclusions Regarding Issues 1 and 15

264. Appellants have not shown by a preponderance of the evidence that ADEQ's decision not to include ALs or AQLs in the Permit was based on a technical judgment that is clearly invalid.

265. Appellants have not shown by a preponderance of the evidence that ADEQ failed to consider whether the likelihood of damage to, or degradation of, the groundwater during the two year monitoring period. To the contrary, the preponderance of the evidence shows that ADEQ considered the issue, but concluded that no damage or degradation was likely to occur during the monitoring period. Appellants have not shown that ADEQ's conclusion was based on a technical judgment that was clearly invalid.

Issue 2 – Leach Testing

266. Appellants argue that ADEQ made an invalid technical judgment by relying on Rosemont's leaching and modeling data as a demonstration that infiltration, leaching, seepage from the DSTF and WRSA will not contaminate the aquifer.

Characterization of the Materials and Wastes

267. An applicant for an aquifer protection permit must provide ADEQ with a characterization of all applicable wastes in sufficient detail to allow ADEQ to evaluate

the proposed design, construction, operation, closure, and post-closure plans. This characterization process is used to determine the types of discharges from a facility, which is necessary to evaluate each facility's design and to verify that the BADCT controls are applicable to the waste.

268. With its Application, Rosemont provided characterization information for both the waste rock and the mine tailings. Tetra Tech conducted most of the required testing and modeling.

269. The BADCT Manual, Appendix B, provides information and procedures for conducting several types of leach tests, including the synthetic precipitation leaching procedure ("SPLP"), the meteoric water mobility procedure ("MWMP"), and the humidity cell method (ASTM Standard D5744). The Manual shows that the preferred leach-testing method is the SPLP procedure, which is EPA method 1312.

270. The BADCT Manual provides that kinetic tests may be used to confirm the results of static tests in determining the rates of acid generation, acid neutralization and sulfide oxygenation, and to test proposed control and treatment methods. Rosemont's consultant, Tetra Tech, did so in that it compared the humidity cell test results to those of the SPLP and MWMP tests.

Tetra Tech's Testing of the Materials

271. Tetra Tech conducted SPLP, MWMP, and humidity cell tests on the individual rock types that make up the Mine Site. Rosemont also conducted acid based accounting, net acid generation ("NAG") pH testing, and whole rock analysis on the materials from the Project Site.

272. According to Dr. Williamson, these methods are standard static and short-term leaching procedures used to test material for acid-generating capacity and metals-release.

273. The SPLP is a static test involving a one-time contact and release of the leaching solution. The solution is then evaluated to determine what chemical constituents have been released from the test material.

274. The MWMP is also static test, with the objective also being to identify the constituents released (or leached) from the test material.

275. Humidity cell testing is a type of kinetic testing that is sustained over many weeks and is intended to show whether a material will produce acid drainage. According to Dr. Williamson, the humidity cell test removes all impediments to reaction (i.e., the weathering of the sulfides) to provide the opportunity for the material to weather as quickly as possible.

276. The humidity cell test is intended to produce in weeks or months weathering in the laboratory that would take years in the field. The humidity cell test is not intended to mimic actual production of leachate in the field. The ASTM standard shows that for some rock types the humidity cell test produces chemical concentrations at rates 3 to 8 times greater than are seen in actual field conditions, and Dr. Williamson's experience shows that it can be 12 to 15 times greater.

277. Acid based accounting tests are used to learn whether material is potentially acid generating (PAG), uncertain, or not PAG.

278. The net acid generating (NAG) pH test is an accelerated weathering test in which peroxide is added to material to create the most vigorous oxidizing conditions possible. The goal is to rapidly and completely oxidize the sulfide minerals present in the test material. If the pH of the resulting solution is acid (less than 7), you have an acid generating material.

279. Whole rock testing is used to identify the respective concentrations of all elements in the material. Because this is not a weathering test, Dr. Williamson's opinion is that it is of limited utility.

Dr. Williamson's Opinions about the Leach Testing

280. As a geochemist, when drawing conclusions about the material under study, Dr. Williamson considers the results of all the tests, rather than any one test.

281. Dr. Williamson's opinion is that the leach testing on the waste rock and the tailings complied with the BADCT Manual (it was "spot on"), the regulations, and the appropriate industry standards. He was also of the opinion that the SPLP, MWMP, and humidity cell test results all were used appropriately, and that ADEQ's reliance on those tests was proper.

282. Dr. Williamson's opinion is that the SPLP and MWMP tests on the tailings yielded very low metals concentrations and that there were no concentrations that were

"pronounced." He acknowledged that this is a subjective statement, but none of the values would "jump off the page."

Ms. Greenslade's Conclusions about the Leach Testing

283. According to Ms. Greenslade, the waste rock and tailings were sampled and analyzed using the methods in the BADCT Manual and the characterization met the applicable rule, A.A.C. R18-9-A202.

284. During the processing of the Application, ADEQ's engineer, Kuldip Khunkhun had noted deficiencies regarding the number of samples and some testing parameters, but these deficiencies were addressed and ADEQ was satisfied that Rosemont provided all the required information.

Dr. Hart's Criticisms of the Leach Testing

285. Dr. Hart's opinion is that ADEQ's reliance on the leach testing was misguided for a number of reasons, including: (1) his belief that the SPLP and MWMP tests were not run for a sufficient length of time; (2) his belief that Tetra Tech failed to account for all the chemical mass generated during the humidity cell tests; (3) his belief that the leach testing shows that the AWQS will be exceeded; (4) the Tetra Tech reports did not adequately identify the grain sizes of the test material; (5) the Tetra Tech reports did not show whether the material tested was abiotic; (6) BADCT required a biological analysis of the waste, which was not done; and (7) the testing was conducted using detection limits that were too low.

286. Dr. Hart acknowledged that prior to this matter he had never interpreted SPLP, MWMP, or humidity cell tests using the mining industry's standards.

SPLP and MWMP Testing

287. Dr. Hart agreed that the SPLP and MWMP were conducted in conformity with the BADCT Manual and the applicable testing protocols. Nevertheless, his opinion was that the SPLP and MWMP were not run for a long enough period of time.

Humidity Cell Testing

288. Dr. Hart initially expressed the opinion that the humidity cell testing was not conducted in conformity with the appropriate ASTM standard. According to Dr. Hart, Tetra Tech accumulated data over five-week periods, which in his opinion meant that Tetra Tech did not account for all the mass that was leached from the samples.

Consequently, in Dr. Hart's opinion, there was a need to interpolate from the existing data to account for the mass from the missing weeks.

289. Dr. Williamson did not agree. According to Dr. Williamson, every 5th week a sample that was equally weighted from the prior four weeks was subjected to mass spectrometry, which does account for all the leached mass. Dr. Williamson testified that the 2012 ASTM standard, at section 11.5.2, shows that compositing of samples in this manner is allowed, and according to Dr. Williamson, compositing is common in the industry.

290. In his testimony during the Shinsky Appellants' rebuttal case, Dr. Hart acknowledged that Rosemont had accumulated the data (accounting for all the mass), and he said that this accumulation of data was not a significant area of disagreement.

291. Dr. Hart went on to testify that in his opinion the humidity cell test results were not appropriate for use as an input to the fate and transport model, because the humidity cell test results do not properly reflect the natural world. According to Dr. Hart, this is because in the humidity cell test the chemicals leached from the samples do not accumulate as they would under natural conditions.

292. Dr. Hart acknowledged however, that he did not actually know for what purpose the humidity cell test results were being used.[21] The evidence of record shows that the SPLP test results and not the humidity cell tests were used as the inputs to the fate and transport model.

293. Dr. Hart's opinions were limited to the leach testing per se and did not include any analysis of the fate and transport of leachate.

Samples Exceeding the AWQS

294. Within the PMA, it would not be a Permit violation to have discharges that exceed the AWQS and violations occur only if there is an exceedance at a POC well.

295. Mr. Emde concluded that Rosemont's discharges would not exceed the AWQS at the POC wells. In reaching that conclusion he relied heavily on the BADCT analysis, on Tetra Tech's area wide fate and transport model, and to a lesser extent, on the understanding that if an AL was exceeded, contingency plans would be triggered.

[21] Dr. Hart did "[n]ot have a clue" what ADEQ did with the humidity cell test results and he had "[n]o idea" whether ADEQ used the humidity cell test results in its technical judgments.

296. Dr. Hart's opinion is that because some leach tests produced chemical concentrations for some constituents that were above the AWQS, Rosemont did not demonstrate that there would be no exceedances of the AWQS at the POC wells. Dr. Hart acknowledged however, that a leach-test result that exceeds the AWQS does not necessarily mean that there will be an exceedance at a POC well, and that he did not know how ADEQ determined that there would be no exceedances of the AWQS.

297. Ms. Greenslade testified that exceeding an AWQS in a leach test would not necessarily mean that the AWQS will be exceeded at any POC well. She also testified that leach tests results showing chemical concentrations that exceeded the AWQS would be factored into the BADCT-engineering analysis.

298. The leach testing results are an input into the fate and transport model, which is one of the factors used to predict whether there would be any exceedances of the AWQS at the POC wells.

299. Leach testing was conducted on each individual rock type from the various geological formations at the Mine Site. According to Ms. Hudson, the fate and transport model considered the overall composition of all rock types, and that the mixing of all rock types has the effect of diluting the impact of the rock types that did exceed the AWQS.

300. As discussed in more detail below, Ms. Hudson testified that the infiltration and seepage modeling shows that there would be no expected discharges from the WRSA and that the anticipated discharges from the DSTF would not exceed the AWQS.

301. Dr. Williamson's opinion is that the data and evidence show to a reasonable scientific certainty that there will not be an exceedance of the AWQS at the POC wells.

302. Dr. Williamson was of the opinion that, in for example the WRSA, the rock types that did have exceedances in the leach testing will be subject to dilution from the other rock types that will also be placed in that facility. Dr. Williamson also testified that in the ground at the Mine Site, chemical constituents in any discharges from the facilities will be subject to dilution, absorption, or other limiting factors.

303. Dr. Williamson acknowledged that he had not done any testing to determine the extent of any such dilution, but he was also of the opinion that such

testing was not necessary because the composite and bulk leaching solutions did not exceed the AWQS.

Grain Size of the Samples

304. Dr. Hart testified that the Tetra Tech reports Rosemont submitted to ADEQ did not identify the grain sizes that were used in the leach tests. The grain size is important because it affects the speed at which chemical constituents will leach from the material.

305. Based on his knowledge of the testing that was conducted, Dr. Williamson testified that the grain sizes used for the waste-rock testing were appropriate, and that industry standards for sampling and the ASTM procedures for crushing, grinding, and sieving were all followed.

306. The tailings samples that were leach tested were produced by Rosemont's metallurgists who were refining Rosemont's ore recovery process and these samples are representative of what is expected to be placed in the DSTF. Consequently, Dr. Williamson was of the opinion that the tailings samples were appropriate for the testing conducted.

Biology of the Samples

307. Dr. Hart was critical of the leach testing because the applicable reports did not show whether the tests were conducted under abiotic conditions and microbial activity will influence the reaction rates.

308. Dr. Williamson agreed that it is well established that microbes play a role in geochemistry and he testified that Rosemont's samples were not sterilized, meaning that bacteria or microbes were present in those samples. Dr. Williamson also testified that it is understood that there is no need to inoculate samples prior to testing, because the naturally present bacteria are sufficient.

Biological Characterization of the Discharges

309. Dr. Hart testified that Rosemont's waste characterization was incomplete because it did not include a biological component, which is referenced in both the rules and the BADCT Manual.

310. Mr. Smit testified that the biological characterization is typically required for wastewater treatment plants, which have a biological component to their effluent.

311. Ms. Greenslade testified that the BADCT Manual and the applicable rule do not require biological characterization for mine waste because the mining process does not involve biological processes similar to that of a wastewater treatment plant.

312. Ms. Greenslade also testified that the BADCT Manual's reference to biological mechanisms is applicable to situations where the applicant plans to use attenuation in the vadose zone. Rosemont is not using such attenuation.

Detection Limits

313. Dr. Hart's opinion is that the laboratory detection limits used by Rosemont were too high and that had lower detection limits be used, some of the "non-detects" for arsenic, antimony, and thallium would have been reported as detected.

314. Dr. Williamson agreed that if the purpose of leach testing was to verify that there were no exceedances of the AWQS, it would be appropriate to use detection limits below the AWQS. The leach testing was not conducted for that purpose.

315. Ms. Hudson acknowledged that some of the earlier testing was conducted using detection limits that were higher than the detection limits used in later testing. According to Ms. Hudson, subsequent testing was conducted at lower detection limits and that testing showed than many of the non-detect samples were still non-detect.

Conclusions Regarding Leach Testing and Waste Characterization

316. The preponderance of the evidence shows that Rosemont followed industry standards and the BADCT Manual in conducting the leach testing. Dr. Hart did not understand the purposes for which these tests were run and his testimony when weighed against the other experts does not show that ADEQ's judgment was clearly technically invalid.

317. Dr. Hart's opinion that the AWQS would be exceeded was based on the leach testing results alone, but he acknowledged that this was not dispositive of the issue. The preponderance of the evidence shows that exceeding an AWQS in the leach testing does not necessarily mean that the AWQS will be exceeded at the POC wells. Appellants have not shown by a preponderance of the evidence that the AWQS will be exceeded at the POC wells.

318. The preponderance of the evidence shows that the leach testing samples were of an appropriate grain size and that these samples were not abiotic.

319. Mr. Smit and Ms. Greenslade provided persuasive testimony showing that a biological characterization of Rosemont's waste was not required. Appellants have not shown by a preponderance of the evidence that the BADCT Manual required a biological characterization of Rosemont's waste. And even if the BADCT Manual did call for such a characterization, ADEQ is not required to follow that Manual.

320. Dr. Hart's testimony regarding the detection limits is not sufficient to show that ADEQ's technical judgment was clearly invalid because Dr. Hart acknowledged that he did not understand why many of the tests were conducted or for what purpose the test results were used.

321. Appellants have not shown that ADEQ made a technical judgment that is clearly invalid regarding Rosemont's leaching and waste characterization.

Issue 2 – Infiltration, Seepage, Fate and Transport Modeling

322. Appellants argue that ADEQ made an invalid technical judgment in its reliance on Rosemont's leaching and modeling data as a demonstration that infiltration, leaching, and seepage from the tailings facility and waste rock facility will not contaminate the aquifer.

Tetra Tech's Modeling

323. Tetra Tech prepared three versions of an Infiltration, Seepage, Fate and Transport Modeling Report providing information and results related to modeling conducted at the WRSA and DSTF.[22] The second revision (Revision 2) was prepared after the Permit was issued and was not submitted to ADEQ.

324. Infiltration is the portion of rainfall (or snowmelt) that enters a facility by downward flow through the surface; seepage is the diffuse outward flow of water from a facility; and fate and transport refer to the process of water passing through a facility and its resulting chemical composition as it migrates away from that facility. Exhibit ADWR 77 p. 1 (PDF p. 12).

325. Seepage from a facility can result from precipitation or from entrained water in the material.

[22] Exhibit ADEQ 60 (original report, dated February 2010); Exhibit ADEQ 77 (Revision 1, dated August 30, 2010); Exhibit Rosemont 81 (Revision 2, dated June 2012).

326. Tetra Tech developed an infiltration and seepage model for the WRSA and AMEC Earth & Environmental, Inc. ("AMEC") developed an infiltration and seepage model for the DSTF. Tetra Tech conducted fate and transport modeling for both facilities using these infiltration and seepage modeling results.

327. The infiltration and seepage modeling shows that there would be no seepage from the WRSA and a maximum of 8.4 gallons per minute from the DSTF.

328. For the DSTF, AMEC concluded that precipitation would infiltrate to a maximum depth of eight feet and then would evaporate out of the facility, which is known as "store and release." The seepage from the DSTF would result not from precipitation, but rather from the entrained water in the tailings themselves.

329. Based on the modeling, Tetra Tech concluded that there would be no impact to the groundwater system from seepage.

330. ADEQ relied on the Tetra Tech modeling results as part of the showing that there would be no exceedances of the AWQS at the POC wells.

Dr. Myers's Criticism of the Infiltration and Seepage Modeling

331. Dr. Myers did not agree with Tetra Tech's conclusion that there would not be any impact to the groundwater system. Dr. Myers's testimony was primarily with regard to what he saw as deficiencies in the WRSA modeling, but he was also of the opinion that Tetra Tech's conclusions regarding the DSTF were "dubious."

332. With regard to the WRSA modeling, Dr. Myers expressed concerns in four areas: (1) the climate input parameters; (2) the soil parameters used; (3) the possibility of preferential flows; and (4) his opinion that Tetra Tech did not consider stormwater ponds. Dr. Myers testified that his criticisms of the climate input parameters also applied to the DSTF.

Climate Inputs

333. In the information submitted to ADEQ, Tetra Tech reported the results of infiltration and seepage modeling conducted using three data sets: (1) a 365-day, 50-year average using data from the Nogales 6N station; (2) a ten-year transient model using data from the Tucson University of Arizona station (the "U of A station"); and (3) two storm events, one of which was a 100-year 24-hour storm of 4.75 inches, and the other a storm of approximately 6 inches of rain in 7 days. Tetra Tech also conducted a

model run using the actual 50-year record from the Nogales 6N station, but this model run was considered in Revision 2 that was not submitted to ADEQ.

334. AMEC used climate data from the Santa Rita Experimental Range station (the "Santa Rita station"), for its infiltration and seepage modeling at the DSTF.

The 365-day 50-year runs

335. The 365-day, 50-year average daily value used 50 years of daily record data from the Nogales 6N station. For each day of the year, the values were added and then divided by 50 to get an average daily value. For example, the daily value for January 1st from each of the 50 years was totaled and then divided by 50, to get the average daily value for January 1. The process is then repeated for each day of the year, creating 365 days of average values.

336. Dr. Myers was critical of this method because in his opinion it causes the large storms to be cancelled or averaged out of the model. If, for example, there were one or two years in which there was a large storm on a given date (e.g., January 1), with little or no rain on that date in the other 48 or 49 years, the resulting average would be low and the large values would not be reflected in the model.

337. To demonstrate this effect, Dr. Myers created a graph showing the average daily values as calculated by Tetra Tech and the potential evapotranspiration ("PET") rate as a monthly value. Exhibit PC 79.

338. Evapotranspiration is, in essence, the combination of evaporation from the soils and the transpiration from plants. PET is the amount of evapotranspiration that would occur if precipitation is not the limiting factor. If the PET is greater than the precipitation, then all the rain hitting the ground is likely to be evaporated or transpired back into the atmosphere.

339. Dr. Myers's graph shows that the calculated precipitation exceeds PET only twice in the 365 days.

340. Ms. Hudson agreed with Dr. Myers that the average daily value method does average-out big events, but she explained that this was why Tetra Tech also ran the model using the two extreme storm events (the 24-hour 100-year storm and the 7-day storm with continuous rain).

341. Ms. Hudson also testified that Tetra Tech used the average daily values because it believed these gave the worst-case scenario, meaning the scenario most likely to produce seepage from the model.

342. It is a fundamental concept in soil mechanics that wet soils take additional water better (or more easily) than dry soils. According to Ms. Hudson, for dry soils, "you really have to force the water to go in."

343. In Arizona, this means that it can be difficult to model infiltration because the soils get so dry that they do not allow moisture in. Ms. Hudson explained that Tetra Tech's belief was that using the average daily values would give the best chance to see seepage out of the model, because that data set produces a small quantity of rain almost every day.

344. Ms. Hudson also agreed that Dr. Myers's graph showing that PET was greater than precipitation on most days raises a valid concern. But according to Ms. Hudson, evaporation is four to five times higher than precipitation at almost all of the weather stations in Arizona. Consequently, Ms. Hudson's opinion is that the data shows that PET is greater than precipitation almost every day, which is what Dr. Myers's graph shows and not that Tetra Tech made an erroneous assumption.

Ten-Year Transient Model

345. Rosemont conducted a model run using data collected at the U of A station between January 1, 1997 and December 31, 2006.

346. Using the first year of this data, Dr. Myers created another graph showing average daily precipitation v. PET. That graph shows that precipitation exceeds PET 22 times the first year, which Dr. Myers believes supports his conclusion that the average daily value method understates the actual precipitation.

347. Dr. Myers's opinion was that there were advantages in using the ten-year transient model. However, Dr. Myers was also of the opinion that the data from the U of A station is not representative of the conditions expected at the Rosemont Site.

348. The average precipitation at the U of A station was 10.5 inches per year, whereas the average precipitation at the Mine Site is 17.12 inches per year. However, the Mine-Site data is for three years only (2005 through 2008) and is not considered to be of sufficient duration for modeling purposes.

349. The average precipitation at the Nogales 6N station is 17.37 inches per year.

350. Dr. Myers's opinion is that Rosemont should have used the data from the Santa Rita station which shows an average of 22.18 inches per year.

351. Dr. Myers's opinion is that the Santa Rita station data is more appropriate because that station is closer to the Mine Site and its climate is more comparable to that of the Mine Site's than is the U of A station.

352. Ms. Hudson explained that Tetra Tech used the U of A station data in response to a request from SRK Engineers who were conducting an independent third-party review of Tetra Tech's work as part of the NEPA process. SRK had asked Tetra Tech to look at a period of more than one year and to use daily data.

353. Ms. Hudson acknowledged that the U of A station does get less rain than the Rosemont Mine Site. But Ms. Hudson's opinion is that it was appropriate to use the U of A station data because it was the best data available that met SRK's criteria.

354. Ms. Hudson did not use the Santa Rita station data, because in her opinion, the Santa Rita station receives more precipitation than the Rosemont site. This is because the Santa Rita station is on the west side of the mountain ridge and Rosemont is in a "rain shadow" on the east side of the mountain ridge. Storms coming from the west must rise over the mountain ridge to get to Rosemont and in doing so, the rain falls on the west side of the mountain ridge.

355. According to Ms. Hudson, Rosemont is also in a rain shadow for the monsoon season storms that come from the south. Those storms encounter mountain ranges that "split" the storms causing them to bypass the Rosemont Site.

356. Ms. Hudson acknowledged that SRK initially requested that Tetra Tech use the Santa Rita station data, but after Tetra Tech explained why it used the Nogales 6N data, SRK no longer had a concern about the issue.

357. The Nogales 6N station is typically wetter than the U of A station on an annual basis and Ms. Hudson's opinion is that the Nogales 6N data is very representative of the Rosemont Site.

358. Ms. Hudson also testified that AMEC did use the data from the Santa Rita station and it concluded that there would be no seepage resulting from precipitation at

the DSTF. Consequently, according to Ms. Hudson, Tetra Tech used three different data sets and AMEC used a fourth data set, but they reached the same conclusion, namely that there would be no seepage caused by precipitation at the Rosemont Site.

Storm Event Model

359. Tetra Tech's infiltration and seepage model included a run using a 100-year, 24-hour storm (4.75 inches in 24 hours) and a winter storm event with about seven inches of rain in six days. Ms. Hudson was not certain, but she thought that the winter storm event was based on a real storm that had occurred in the area.

360. The model results show that 91 to 94 percent of the precipitation falling on the WRSA becomes runoff, which means it is removed from the model and cannot become seepage.

361. Dr. Myers's opinion is that runoff of 91 to 94 percent was high considering the heterogeneity of waste rock piles, which have a variety of pore spaces because the rock itself is of differing sizes (ranging from silt to boulders).

362. Dr. Myers used the Soil Conservation Service ("SCS") Runoff Methodology to determine what curve number would be required to generate runoff of 91 to 94 percent. The SCS method is an empirical method developed to determine runoff from ungaged sites.

363. A runoff of 91 to 94 percent would require a curve number of 96-97, which is slightly less than completely impervious. Semiarid rangeland has a curve number of 93, which in Dr. Myers's opinion is the highest reasonable curve number for the Mine Site.

364. According to Dr. Myers, a curve number of 93 results in 0.85 inches of water being left on the Site for potential seepage, which is about twice as much water as was left using the curve number of 96-97 (0.43 inches).

365. Ms. Hudson testified that Tetra Tech did not use curve numbers, but rather Tetra Tech used as inputs to the model soil and material properties determined through laboratory testing. The model then predicted the runoff based on those measured properties.

366. Ms. Hudson also explained that the discharging facilities at issue are not natural ground, but are engineered surfaces that are intended to drain and that will be sloped so that the surfaces shed as much water as possible.

367. Ms. Hudson was of the opinion that Dr. Myers's testimony about the pore spaces in the waste rock pile did not account for how that material will be placed or consider that heavy haul-trucks will be driving on the waste rock. Ms. Hudson's opinion is that the pores will be filled as the material is dumped because the boulders will fall to the bottom and smaller material will fill the voids. Ms. Hudson was also of the opinion that the haul trucks will break down the material to allow filling of voids and that these trucks will compact the surface.

Supplemental Model Run

368. Tetra Tech's Revision 2 of the Infiltration and Seepage Model Report was completed after the Permit was issued and was not presented to ADEQ.

369. In Revision 2, Tetra Tech conducted an additional model run using the actual data from the Nogales 6N station.

370. Dr. Myers testified that Revision 2 shows that a large storm that occurred in 1968 caused the modeled draindown rate to increase by about a tenth of a gallon per minute for almost 10 years. This testimony is supported by Illustration 5.34 in Exhibit Rosemont 81.

371. In Revision 2, Tetra Tech characterized this increase in the draindown rate as "slight." Tetra Tech went on to write: "During this event the moisture content in the tailings material increased along with the drainage rate, but never reached saturated conditions." Rosemont Exhibit 81 p. 64 (PDF p. 69).

Soil Parameters (Permeability and Conductivity)

The WRSA

372. Permeability is the rate at which water would flow through a material when the hydraulic gradient is 1. Conductivity is the rate at which water can move through the soil.

373. Dr. Myers was of the opinion that the infiltration and seepage model used conductivity rates that are not representative of those that would occur in the WRSA.

374. In support of his position, Dr. Myers referred to Exhibit PC 81, which shows figures that were copied from Tetra Tech's 2011 version of the fate and transport model.

375. Exhibit PC 81 shows that under saturated conditions, the permeability for run of the mine material is 170 feet per hour. That same figure shows that as the soil becomes unsaturated, the rate drops to 0.0007 feet per hour, which occurs at a pressure of about 300 pounds per square inch. According to Dr. Myers, this created a situation where seepage was unlikely to occur.

376. Ms. Hudson testified that the permeability value of 170 feet per hour and all points on the conductivity curve were established by testing the material itself. She agreed that 170 feet per hour is a fast rate and stated that it was equivalent to an open pipe.

377. Ms. Hudson agreed that there was a dramatic change in hydraulic conductivity shown in the conductivity curve, but that change occurred at a location where the pressure is about 300 pounds per square inch, which is very high compared to atmospheric pressure.

378. Ms. Hudson's opinion is that Dr. Myers's testimony regarding the change in hydraulic conductivity shown in the curve did not adequately account for the change in pressure over the distance represented in that curve. Unsaturated systems are not linear and Ms. Hudson would expect material properties to change greatly under those conditions.

The Post-Closure Reclamation Cover

379. For the post-mining (or post-closure) period, on the WRSA the Tetra Tech model used a reclamation cover that has a hydraulic conductivity of $10^{(-5)}$ cm/second. Dr. Myers testified that the Tetra Tech report does not show the source for this value and his opinion is that the use of this rate causes the majority of the precipitation to become runoff under the model.

380. Dr. Myers was also of the opinion that a conductivity rate of $10^{(-5)}$ cm/second is an unreasonably low infiltration rate when compared to SCS data for Class D soils. Dr. Myers's opinion is that a more reasonable rate would allow more water to penetrate the WRSA and become potential seepage.

381. The post-closure cover is based on the Environmental Protection Agency's requirements. Ms. Hudson's recollection was that the Environmental Protection Agency referred to it as a multi-component or an evapotranspiration cover. These covers are typically used on waste rock piles or landfills. By definition, these protective soil covers are required to have a hydraulic conductivity of $10^{(-5)}$ cm/second or "tighter".

382. There are commonly accepted hydraulic conductivities for different materials. According to Ms. Hudson, $10^{(-5)}$ cm/second is equivalent to a silt or glacial till, and testing shows that the material at the Rosemont Site is in this range.

383. Ms. Hudson also testified that the WRSA cover will be engineered with the goal being to keep water from infiltrating.

The Possibility of Preferential Flows

384. Dr. Myers's opinion is that because the Tetra Tech infiltration and seepage model treated the WRSA as homogeneous, that model is unlikely to be effective, because the model does not account for preferential flow pathways.

385. "Preferential flows" are flows that occur at a rate faster than the average flow rate through an area. Preferential flows can occur in areas with irregular surfaces, heterogeneity in the soil, and layers of fine and coarse sand, all conditions Dr. Myers would expect to occur in the WRSA.

386. In support of his opinion, Dr. Myers relied, at least in part, on "Field-Scale Experiments of Unsaturated Flow and Solute Transport in a Heterogeneous Porous Medium," a study of preferential flow through waste rock.

387. A conclusion of that study is that movement of precipitation varied greatly in different portions of a waste rock dump and that flow modeling based on a single set of parameters was unlikely to be effective.

388. Ms. Hudson did not agree that preferential flows would occur at the WRSA. In her opinion, the permeability rate of 170 feet per hour is so high that flow rates could not be expected to be any greater than that, and in effect, all the flow will be preferential.

389. Ms. Hudson's opinion is that the study cited by Dr. Myers is not applicable to conditions at the Rosemont Site because the study took place in Canada where

climatic conditions, including temperature and precipitation, are different than those at Rosemont, and because the study test-cells were constructed in a manner unlike the WRSA.

390. The test-cells at the study site were created using a backhoe without any grading, whereas the material in the WRSA will be dumped from trucks, driven on, and then pushed with dozers. According to Ms. Hudson, at Rosemont, the finer material will trickle down and fill in the pore spaces. As a result, Ms. Hudson's opinion is that the study site and the Rosemont Site do not have the same compaction or consolidation.

391. Ms. Hudson also testified that the study test-cells were only 5 meters thick, whereas the WRSA will be 100 meters thick, and that the study test-cells were designed to allow the precipitation to come through the cells, whereas the WRSA will be graded to have the water drain off.

Stormwater Ponds

392. Rosemont plans to construct five stormwater retention ponds on the DSTF and several others near the WRSA. The WRSA has ponds as control structures on the benches, but none on the top of the pile. The DSTF will have a stormwater pond on the surface of the facility.

393. Dr. Myers's opinion was that the Tetra Tech infiltration and seepage model did not consider the long term seepage from these stormwater ponds and that water from these ponds could seep into the WRSA and DSTF.

394. In support of his opinion, Dr. Myers referenced a Tetra Tech report that states "[r]unoff was enabled for climatic boundary conditions of the tailings (no ponding of water) as methods will be employed to divert meteoric water off the facility by grading and/or constructing diversion ditches." Exhibit ADEQ 77, Appendix A p. 25 (PDF p. 105).

395. Ms. Hudson's opinion is that ponding was properly evaluated for the modeling and that it was specific to how the facilities are planned to be designed. Ms. Hudson was also of the opinion that the sentence about the DSTF that Dr. Myers relied upon was poorly written and was intended to show that there was no ponding along the DSTF's benches.

396. For the WRSA, in the model runs using the 24-hour 100-year storm and the multiday storm, Tetra Tech simulated the ponding and it evaluated the impacts on the WRSA's benches. Tetra Tech did not include the stormwater ponds in the model runs using the average daily rain values because the ponds are storm-control structures that will not contain water on the average day.

397. Ms. Hudson testified that the AMEC model shows that ponding on the DSTF was considered. She could not say whether that was written in the text of any of the reports, but she relied on a graphic representation of the model. (Rosemont Exhibit 81 p. 36 (PDF p. 41.)) That figure shows that the tailings are lower than the buttresses, which according to Ms. Hudson means that the water cannot run off.

398. Ms. Hudson was also of the opinion that because the DSTF is not designed to shed water, the 50-year model would inherently have considered ponding.

Depth to Groundwater in the Project Area

399. Dr. Myers's opinion is that near the WRSA and DSTF, the depth to groundwater is shallow and in some areas is as little as ten feet.

400. Dr. Myers's opinion is based on: (1) Exhibit Rosemont 90, a color coded water contour map; (2) Tetra Tech's Davidson Canyon Report; and (3) the possibility that springs in the area of the Mine Site are "phreatic."

Exhibit Rosemont 90

401. The legend on Rosemont 90 shows that the colors and contour lines represent the "Depth to Groundwater." The map shows those depths ranging from less than ten feet to greater than 100 feet. Dr. Myers's opinion is that the legend means just what it shows (i.e., that this shows the depth to groundwater in the area).

402. Mr. O'Brien's opinion is that the "Depth to Water" shown on Rosemont 90 is the depth to water in the well casings, which is the depth to the potentiometric surface, not the saturated zone. The potentiometric surface is the level to which water will rise if an aquifer's confining layer is breached. For an unconfined aquifer, the potentiometric surface is the water table.

403. Mr. O'Brien's opinion is that the depth to the saturated zone at the site is much deeper than the values shown on Rosemont 90. According to Mr. O'Brien, if there

was a shallow zone of saturation, there would be marshes or lush vegetation that do not exist in the areas shown on Rosemont 90 as having shallow depths to groundwater.

404. Mr. O'Brien also testified that he knows the people who prepared Rosemont 90 and, according to Mr. O'Brien, "everybody" has drawn the same conclusion, which is that the alluvium is dry.

405. To verify that he was correct, Mr. O'Brien reviewed the logs from geotechnical soil-borings drilled in the area. Generally, all of the borings were dry, with drilling depths ranging from 50 to 120 feet.

406. Mr. Meyer, the Tetra Tech engineer, was involved in the placing of the geotechnical borings. Mr. Meyer confirmed that the alluvium was generally dry and that Mr. O'Brien's testimony regarding the logs was consistent with what the logs show. Mr. Meyer acknowledged that some of the alluvium may have been moist, but none of it was saturated.

Phreatic Springs

407. A phreatic spring is one located at a point where the water table intersects the ground surface. The source for a spring may also be "perched" groundwater that is not part of, or connected to, the regional aquifer, or it may be water being pressure-fed through factures or conduits with the water source being perhaps as much as a thousand feet below the ground surface.

408. Based on Dr. Myers's experience with low-flow springs, his opinion is that the springs in the area that he is referring to are more likely to be phreatic than under pressure flow because the volume of flow is "low" and because the flow fluctuates quite a bit, whereas the flow from springs under a 1000 feet of pressure would be steady.

Davidson Canyon Report

409. The Davidson Canyon Report shows that the depth to the regional groundwater table is 7 to 30 feet below the channel.

410. Mr. O'Brien was involved in the preparation of the Davidson Canyon Report. Davidson Canyon is not shown on Rosemont 90 but based on Mr. O'Brien's testimony and the scale on that exhibit, Davidson Canyon is several miles from the Rosemont facilities.

411. According to Mr. O'Brien, the elevation difference between Davidson Canyon and the Rosemont Site is about 2,500 feet.

Conclusions Regarding Depth to Groundwater

412. The greater weight of the evidence shows that the depth to groundwater in the area of the Mine Site is greater than 10 feet.

413. Mr. O'Brien and Mr. Meyers have first-hand knowledge of the conditions at the Rosemont Site and their interpretation of Rosemont 90 is supported by the soil boring logs and Mr. Meyer's knowledge of those borings.

414. The Davidson Canyon Report is not persuasive in light of the distance from the Rosemont Site and elevation change between the two locations.

415. Dr. Myers's opinion regarding the springs was based primarily on his experience in other areas, not on personal knowledge of the Rosemont Site. Consequently, Dr. Myers's opinion is not sufficient to show that these springs are phreatic.

Conclusions Regarding Issue 2 Infiltration, Seepage, Fate and Transport

416. Ms. Hudson provided persuasive testimony showing that Tetra Tech's climate inputs were appropriate and why using the Santa Rita station data would not have been appropriate. The evidence presented by Appellants is not sufficient to show that the use of these climate inputs was clearly technically invalid.

417. Ms. Hudson provided persuasive testimony that the soil parameters and related information were established based on testing the Mine Site's material. Appellants did not show that the SCS curve number information would be representative of actual conditions at the Site. Consequently, Dr. Myers's use of the SCS curve number is not sufficient to show that the soil parameters used were the result of a technical judgment that was clearly invalid.

418. Ms. Hudson provided persuasive testimony showing that the flow parameters (permeability and conductivity) used by Tetra Tech were based on laboratory data and that the study on preferential flow through waste rock relied upon by Dr. Myers was based on conditions that are not applicable to the Project Site. Dr. Myers's testimony with regard to those flow parameters was based on conjecture (albeit educated conjecture) or was focused on what he saw as a lack of information in the

Tetra Tech reports. Consequently, Appellants have not shown that a clearly technically invalid judgment was made regarding the permeability and conductivity or the potential for preferential flows in the WRSA.

419. Ms. Hudson provided persuasive testimony that Tetra Tech considered the stormwater ponds at the WRSA and that the AMEC model took into account the ponding on the DSTF. Dr. Myers's testimony was not sufficiently persuasive to show that a technically invalid judgment was made on this issue.

420. Appellants have not shown that ADEQ made a technical judgment that is clearly invalid regarding the infiltration, seepage, fate and transport modeling at the Site.

Issue 4 – NEPA and the MPO[23]

421. Rosemont is required to obtain from the United States Forest Service approval of a mine plan of operations ("MPO"). The approval of the MPO is a federal action that is subject to the requirements of NEPA.

422. In 2007, Rosemont submitted a proposed MPO for review and approval by the Forest Service. As of the hearing dates, the NEPA process had not been completed and the Forest Service had not made a final decision regarding the required MPO.

423. Rosemont will be required to comply with the terms of the Permit and the terms of the MPO (when approved). Consequently, if the Forest Service approves a MPO that differs from Rosemont's approved Permit, Rosemont will need to have the Permit amended. Depending on the nature of any such amendment, this may require ADEQ to accept public comment before reaching a decision.

424. The NEPA process begins with a "proposed action," which in this case is the proposed MPO. The Forest Service also evaluates other alternatives. In October 2011, the Forest Service issued a Draft Environmental Impact Statement in which it evaluated six alternatives, including the Forest Service's preferred alternative, known as the Barrel alternative.

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[23] In Case Management Order No. 13, dated August 24, 2012, the ALJ granted Rosemont's Motion in Limine to preclude the testimony of Professor Joseph Feller on this issue. On October 23, 2012, the Shinsky Appellants submitted an "Offer of Proof: Affidavit of Dr. Feller re Issue #4." Rosemont and ADEQ submitted objections to the Shinsky Appellants' Offer of Proof, to which the Shinsky Appellants filed responses. The ALJ has not considered the substance of the Offer of Proof or the arguments related to that Offer of Proof.

425. The Barrel alternative differs from the design set out in Rosemont's Application.

426. In a letter dated July 10, 2012, Rosemont notified the Forest Service that if the Barrel alternative is selected, Rosemont would modify the Project by eliminating the heap leach facilities and an under-drain system. Rosemont's letter was limited to a discussion of the Barrel alternative and provides no information about the other alternatives.

427. The Public Notice regarding the Draft Permit that ADEQ had published on December 20, 2011, shows that the Permit might need to be amended pending the outcome of the NEPA process. When ADEQ issued the Permit on April 3, 2012, it was aware of the Draft Environmental Impact Statement and that the Barrel alternative was the Forest Service's preferred alternative.

428. The Licensing Time Frames ("LTFs") require ADEQ to complete the administrative and substantive reviews of an aquifer protection permit application within specified time periods.

429. If ADEQ does not adhere to the LTFs it must refund the applicant's processing fees, which is considered to be a sanction or penalty. In Rosemont's case, the fees paid to ADEQ are $225,000. ADEQ would also be required to finish processing the application. A.A.C. R18-1-501(27).

430. The applicable rules allow ADEQ to suspend the LTFs if certain conditions are met, and the rules provide that the applicant may agree to an extension of the LTFs. A.A.C. R18-1-503 to 505 (suspensions) and R18-1-506 to 510 (extensions).

431. According to Mr. Smit, there was no basis on which ADEQ could have suspended or extended the LTFs for Rosemont's Application and that the NEPA process was not a valid basis for any such extension.

432. Ms. Greenslade was not aware of any rules that allow ADEQ to extend the LTFs for the NEPA process.

433. ADEQ did not ask Rosemont to agree to an extension of the LTFs, and Rosemont did not agree to any extension of the LTFs.

434. Appellants have not shown that ADEQ's decision to approve Rosemont's Application before the NEPA process is completed was based on a technical judgment

that is clearly invalid. Appellants' concerns are speculative in that there may never be a conflict between the Permit and the MPO. And, as set out above, because Rosemont will be required to comply with the Permit and the MPO, if the Permit does not reflect what is required under the MPO, Rosemont will be required to obtain a Permit amendment.

Issues 6 and 17 – Low Probability Events and the 100-year 24-Hour Storm

Dr. Urken's Testimony on Issues 6 and 17

435. Dr. Urken's opinion is that ADEQ failed to analyze impacts on groundwater from low-probability reasonably foreseeable events, and more particularly, the economic impact that could accrue if the Mine experiences a failure caused by these events. According to Dr. Urken, these reasonably foreseeable events include natural conditions such as earthquakes and severe weather (e.g. lightning strikes or extreme rain events), human failures, failures of engineered systems, and terrorist attacks.

436. Dr. Urken's opinion is that Rosemont should have engaged in contingency planning related to these types of events, including conducting a Monte Carlo simulation (or simulations) to evaluate the risk that these events might occur.

437. Dr. Urken's opinion is that Rosemont and ADEQ have not shown that the Project will not contaminate the groundwater because Rosemont did not analyze these events.

438. Dr. Urken's opinion is that although the Rosemont Project may meet the BADCT standards, the Project was not based on a methodology of learning from mistakes. Dr. Urken's opinion is that ADEQ and BADCT are operated without being subject to a sufficient vetting and peer review process and that the BADCT standards were written by the mining industry without input from the "engineering community" in the broadest sense of that term.

439. Dr. Urken acknowledged that he knew of no specific legal provision that would allow ADEQ to require Rosemont to engage in the type of systems analysis that he was testifying about.

440. Dr. Urken's opinions were not based on the statutes or rules, but rather were based on his understanding of "best practices" in engineering. "Best practices" is Dr. Urken's term of art and it is not based on any applicable statute or rule.

Contingency Plan

441. Dr. Urken's opinion is that the Permit's section on "Emergency Response and Contingency Requirements" is not adequate. Dr. Urken acknowledged that his "discomfort" with that section related to both the Permit itself and the applicable rule (A.A.C. R18-9-A204).

442. Dr. Urken initially testified that A.A.C. R18-9-A204 is too vague to easily determine whether the Permit's Emergency Response and Contingency Requirements section complies with that rule. Ultimately, Dr. Urken acknowledged that the Permit's contingency plan requirements "may" meet the rule as it is being interpreted, but not as he would like to see the rule interpreted.

443. The Permit required Rosemont to submit to ADEQ a contingency plan within 90 days of the Permit's issuance.

444. In June 2012, Rosemont submitted to ADEQ a contingency plan. On September 17, 2012, Mr. Smit testified that Rosemont's contingency plan generally meets the requirements of A.A.C. R18-9-A204, however there was one deficiency related to a sampling protocol.

445. As of September 17, 2012, ADEQ had not notified Rosemont of that deficiency and Rosemont was not aware that ADEQ believed that there was a deficiency until Mr. Smit's testimony. Ms. Herther provided credible testimony that Rosemont would address ADEQ's concern.

446. There was no evidence adduced to show that Dr. Urken had reviewed the June 2012 contingency plan.

The 100-year 24-hour Rain Event

447. ADEQ uses the 100-year, 24-hour storm in making BADCT determinations. This standard is set out in the BADCT Manual and is used in reviewing the adequacy of designs for BADCT.

448. Several Appellants presented anecdotal evidence about the "1983 storm," but Appellants presented no expert opinions regarding their assertion that the 100-year 24-hour rain event is no longer valid for actual conditions at the Project Site.

Conclusions Regarding Issues 6 and 17

449. Appellants have not shown that ADEQ's approval of the Permit and the existing contingency plans were based on a technical judgment that is clearly invalid.

450. Appellants have not shown that ADEQ's technical judgment regarding the 100-year 24-hour rain event was clearly invalid.

Issues 8, 9, and 10 – Heap Leach Pad Liner and Discharge Limitations

451. Appellants' evidence on these issues was essentially limited to whether ADEQ made clearly invalid technical judgments: (1) by failing to require a double liner and leak recovery system for the HLP; and (2) by failing to require discharge limitations for the WRSA and DSTF.

Liner at Heap Leach Pad

452. Dr. Chambers testified that Rosemont should be required to use a double liner with a leak-collection system at the HLP.

453. Mr. Meyer, Tetra Tech's engineer, testified that the term "single liner" was a bit of a misnomer as applied to the HLP liner because the liner is a dual system consisting of a geomembrane and a geosynthetic clay layer. The geomembrane is plastic and the geosynthetic clay layer is sodium bentonite held between two layers of fabric.

454. Mr. Meyer's opinion is that the HLP liner system complies with BADCT and with industry standards for heap leach facilities.

455. Ms. Greenslade testified that the HLP liner system meets prescriptive BADCT with the sodium bentonite geosynthetic clay layer being "an equivalent engineering substitution" for the compacted clay layer specified in the BADCT Manual.

456. Dr. Chambers had no opinion as to whether the Rosemont facilities meet the BADCT requirements and he had not read the BADCT Manual prior to the hearing.

457. Dr. Chambers acknowledged that a single liner system is typical at heap leach pads. Nevertheless, Dr. Chambers' opinion is that "best practices" require the use of a double liner at the HLP.

458. Dr. Chambers initially testified that "best practices" go beyond what the law requires, but he later added that he was of the opinion that the law gives ADEQ enough flexibility to require "best practices."

459. Dr. Chambers testified that all liners will leak due to punctures, rips, or tears. Mr. Meyer agreed with this assessment, but testified that the HLP's geosynthetic clay layer subliner, which is of low permeability, will impede any leakage that does occur from the geomembrane.

460. According to Dr. Chambers, an advantage of dual liner systems is that recovery systems (or finger drains) can be included to collect material that that leaks through the top liner. However, Mr. Meyer was of the opinion that the drainage or collection layer of such a system would create a "slip surface" that would be weak and potentially unstable. Mr. Meyer then opined that this may be why a double liner system is not used at many heap leach pads.

461. Dr. Chambers's opinion is that another advantage of a dual liner system is that there would be essentially no hydraulic head on the lower liner. Mr. Meyers agreed that theoretically a second liner would provide improvement, however his opinion is that the HLP's single composite liner is providing such a high level of engineering control, that the second liner is not necessary.

Discharge Limitations

462. ADEQ is required to consider, and may prescribe, discharge limitations as permit conditions if necessary to ensure compliance with the aquifer protection permit program's requirements. A.R.S. § 49-243(K)(4).

463. Dr. Chambers's opinion is that discharge limitations should have been set as a means to verify whether seepage occurs at the WRSA and to confirm the volume of seepage from the DSTF.

464. The Permit contains narrative discharge limitations, but no numeric discharge limitations.

465. Numeric discharge limitations are set for facilities that are using treatment processes to meet the BADCT requirement, with the discharge limitations set as concentrations of the constituents of concern. For the Rosemont discharging facilities,

the BADCT demonstrations were made using engineering controls (such as pond liners) and operating procedures, not treatment technologies.

466. Ms. Greenslade testified that the discharging facilities at Rosemont do not provide points at which discharges can be measured. Dr. Chambers agreed that there is generally no point of discharge for a waste rock pile because they cover such large areas. But he added that seeps will typically develop, which arguably can be considered as points of discharge.

Conclusions Regarding Issues 8, 9, and 10

467. The evidence of record shows that the existing HLP liner system meets BADCT and industry standards. Although Dr. Chambers asserts that "best practices" require a dual liner, he acknowledged that single liner systems are typically used at heap leach pads. Appellants have not shown that ADEQ's decision not to require a dual liner at the HLP was based on a technical judgment that was clearly invalid.

468. The preponderance of the evidence shows that numerical discharge limitations are not appropriate for the Rosemont Project because Rosemont's BADCT demonstration was based on engineering controls and because the discharging facilities do not offer a point at which discharges can be meaningfully measured. Appellants have not shown that ADEQ's decision not to require numerical discharge limitations at the WRSA or the DSTF was based on a technical judgment that is clearly invalid.

Issue 11 – ADEQ's Response to the Public Comments

469. During the public comment period, ADEQ received hundreds of comments. ADEQ prepared a Summary and Response to Public Comments dated April 2, 2012.

470. ADEQ later learned that it had not responded to all comments. Mr. Smit testified that after ADEQ learned this, it reviewed and responded to the comments for which responses had not previously been given, and that these additional comments did not change ADEQ's permitting decision.

471. Although several of the Appellants testified that ADEQ did not adequately respond to their comments, none of the Appellants provided testimony showing specifically that ADEQ had inaccurately summarized or paraphrased comments or that ADEQ's responses were technically invalid.

472. There was no substantial evidence adduced showing that any of the Appellants were disadvantaged by ADEQ's initial failure to respond to all the comments.

473. Appellants have not shown that ADEQ relied on a technical judgment that was clearly invalid when it initially failed to respond to all the comments.

474. Appellants have not shown that ADEQ's summaries and responses to the comments were based on a technical judgment that is clearly invalid.

Issue 12 – ADEQ's Review of the Application

475. ADEQ conducted an administrative completeness review and then a substantive review of Rosemont's Application. In its Disclosure Statement however, ADEQ stated that it was not required to do an independent review of the data submitted by an applicant for aquifer protection permit.

476. Testifying about ADEQ's review of the Application, Ms. Greenslade stated that to the best of her knowledge the statutes and rules do not define the term "independent review." Mr. Smit also testified that he knew of no such definition.

477. Mr. Smit testified that ADEQ uses its independent judgment to evaluate the data submitted with an application and that it evaluates applications using the requirements of the statutes and rules. When asked whether the Disclosure Statement was incorrect, Mr. Smit replied that he could not say, but he later testified that he understood that the sentence in the Disclosure Statement was intended to show that ADEQ would not gather data that was not submitted with an application.

478. Ms. Greenslade testified that ADEQ did review the Application relying on the regulatory requirements found in the aquifer protection permit program's statutes and rules. Ms. Greenslade also testified that ADEQ applied, and relied on, its hydrology, engineering, and other expertise in determining that Rosemont met the requirements for the Permit to be granted.

479. The engineering review is focused primarily on the BADCT demonstration. Kuldip Khunkhun was initially the engineer reviewing Rosemont's Application, and after Mr. Khunkhun retired, Jeffrey Bryan took over that task.

480. Mr. Emde conducted the hydrology review. The purpose of the hydrology review is to assist in determining that the AWQS will not be exceeded at the POC wells.

481. In the substantive review process, Mr. Khunkhun and Mr. Emde would identify deficiencies in the Application and then draft memoranda related to their respective findings. ADEQ would then issue to Rosemont a comprehensive request for information that included both the engineering and hydrology deficiencies, and Rosemont would submit its response(s) to ADEQ.

482. The findings of ADEQ's substantive reviews are summarized in memoranda including: Initial Hydrology Review, September 9, 2009 (ADEQ 47); Hydrology Review of Groundwater Model, February 10, 2010 (ADEQ 51); Second Hydrology Review, November 1, 2010 (ADEQ 96); Third Hydrology Review, June 6, 2011 (ADEQ 120); Final Hydrology Review, October 6, 2011 (ADEQ 126); Initial Engineering Review, April 12, 2010 (ADEQ 53); Engineering Review, November 17, 2010 (ADEQ 99); Engineering Review, April 25, 2011 (ADEQ 118); and Final Engineering Review, October 7, 2011 (ADEQ 127).

483. ADEQ informed Rosemont of the Application's deficiencies in letters including: Request for Additional Information, April 14, 2010 (ADEQ 53); Notice of Incomplete Response to Request for Additional Information, December 3, 2010 (ADEQ 100); and Inadequate Response to Substantive Deficiencies, June 30, 2011 (ADEQ 121).

484. Mr. Emde testified that during the hydrology review he looked at a stack of material about two-feet tall that was submitted with the Application, including the hydrogeological report that is required by rule.

485. In conducting a review, Mr. Emde cannot rerun the groundwater models, but he looks at the model inputs, outputs, and conclusions.

486. Mr. Emde concluded that Rosemont fulfilled its obligation to show that there would not be a violation of the AWQS at the POC wells. In making this determination, Mr. Emde used his training and experience to evaluate the information submitted to ADEQ by Rosemont.

487. Mr. Emde did not agree with the Shinsky Appellants' assertion that he had "rubberstamped" the Application. To illustrate this, Mr. Emde testified about the POC wells and PMA.

488. Initially, Rosemont proposed four POC wells, but at Mr. Emde's "urging" that number was increased to seven. Then in response to public comment, ADEQ later required Rosemont to add an eighth POC well.

489. Similarly, Mr. Emde was not satisfied with Rosemont's proposed PMA, and at his "urging" the PMA was changed (although he acknowledged that the PMA location is primarily a legal issue).

490. Mr. Emde did not know how much time he had spent working on Rosemont's Application, but he estimated that as of late 2011 he had spent about 750 hours on it, and he has done a "great deal" of additional work on the Application since that time.

491. On an aquifer protection permit application such as Rosemont's, ADEQ uses an in-house peer-review process. During the substantive review, that peer review process requires that:

a. The engineer's memos are routed through a unit manager (which was Ms. Greenslade for Rosemont's Application) who verifies that the memos clearly list the deficiencies and what is required to address those deficiencies.
b. The hydrologist and the engineer each read the other's work to gain a working understanding of the issues presented.
c. The project manager compiles the deficiency letter that goes to the applicant and is responsible for ensuring that all citations to statute and rule are correct, that the letter is clear, and that there is no disagreement in what hydrologist and the engineer are requesting.
d. The project manager drafts the permit, but the hydrologist, engineer, and unit manager review the draft permit.

492. Ms. Greenslade testified that the review process is flexible to allow others to be involved and to allow for the appropriate amount of discussion for any given permit. She also testified that given the public interest in Rosemont's Application, the section manager also reviewed the Permit.

493. The preponderance of the evidence shows that ADEQ used its engineering and hydrological expertise to evaluate the data and other information Rosemont submitted with the Application.

494. Appellants have not shown that ADEQ evaluation of the Application was based on a technical judgment that is clearly invalid.

Issue 16 – The Mine Pit as a Sink

495. Appellants argue that ADEQ made an invalid technical judgment when it assumed that the Mine pit would forever remain a "sink" with no outflow of contaminants (because it was below groundwater level).

496. Ms. Herther testified Tetra Tech and another consultant, Montgomery and Associates, each concluded that after the Mine closes, the Mine pit will be a "sink" in perpetuity. This will occur because groundwater flowing into the pit will evaporate faster than it is replenished.

497. A report prepared by Dr. Myers shows that he also concluded that water is not likely to seep from the Mine pit because the groundwater gradient will be toward the pit.

498. On cross examination, Dr. Myers acknowledged that he did not agree with Appellants' assertion that ADEQ's conclusion regarding the Mine pit was in error.

499. The preponderance of the evidence does not show that ADEQ's decision regarding whether the Mine pit is a sink was based on a technical judgment that is clearly invalid.

Issue 19 – Dry Stack in Chile

500. Appellants argue that ADEQ made an invalid technical judgment when it relied upon Rosemont's analysis of a dry stack tailings facility in Chile to prove BADCT worked at the Rosemont Mine.

501. AMEC presented a "brown bag" lunch seminar at ADEQ during which AMEC presented information taken from its November 2008 "Rosemont Copper Company Filtered Tailings Dry Stacks Current State of Practice Final Report." That Report references a facility in Chile.

502. Ms. Greenslade attended the seminar and although she could not recall if the Chilean facility was discussed, she assumes it was because it is referenced in the AMEC Report.

503. Ms. Greenslade did not recall whether Mr. Khunkhun attended the seminar, but ADEQ's entire groundwater section was invited.

504. According to Ms. Greenslade, the AMEC Report was not part of Rosemont's Application, it was not assigned to Mr. Khunkhun as part of his review, and she saw no indication that Mr. Khunkhun used the AMEC Report during his review of the Application.

505. There is no substantial evidence adduced showing that ADEQ relied on Rosemont's (or AMEC's) analysis of a dry stack tailings facility in Chile during its BADCT analysis.

506. The preponderance of the evidence does not show that ADEQ made a decision regarding BADCT for the DSTF that was based upon a technical judgment that is clearly invalid.

CONCLUSIONS OF LAW

1. Appellants bear the burden of proof and the standard of proof on all issues in this matter is that of a preponderance of the evidence. *See* A.A.C. R2-19-119.

2. A preponderance of the evidence is:

> The greater weight of the evidence, not necessarily established by the greater number of witnesses testifying to a fact but by evidence that has the most convincing force; superior evidentiary weight that, though not sufficient to free the mind wholly from all reasonable doubt, is still sufficient to incline a fair and impartial mind to one side of the issue rather than the other.
>
> BLACK'S LAW DICTIONARY 1301 (9th ed. 2009).

3. "An agency shall not base a licensing decision in whole or in part on a licensing requirement or condition that is not specifically authorized by statute [or] rule...." A.R.S. § 41-1030(B).

4. Unless otherwise provided by A.R.S. Title 49, Chapter 2, Article 1, any person who discharges or who owns or operates a facility that discharges shall obtain an aquifer protection permit from ADEQ's Director. A.R.S. § 49-241(A).

5. "For purposes of the aquifer protection permit program ..., discharge means the addition of a pollutant from a facility either directly to an aquifer or to the land surface or the vadose zone in such a manner that there is a reasonable probability that the pollutant will reach an aquifer." A.R.S. § 49-201(12).

6. ADEQ's Director shall issue an aquifer protection permit to a person who demonstrates that: (1) the facility will be designed, constructed, and operated to ensure the greatest degree of discharge reduction achievable through the application of BADCT; and that either (2) the pollutants discharged will not cause or contribute to a violation of AWQS at the applicable POC; or (3) that no pollutants discharged will further degrade at the applicable POC the quality of any aquifer that at the time of the issuance of the permit violates the AWQS for that pollutant. A.R.S. § 49-243(B).

7. "[A]ny person who may with reasonable probability be adversely affected by the action" may appeal ADEQ's grant of an individual aquifer protection permit. A.R.S. § 49-323(A).

8. For purposes of the aquifer protection permit program:

> "Person" means an individual, employee, officer, managing body, trust, firm, joint stock company, consortium, public or private corporation, including a government corporation, partnership, association or state, a political subdivision of this state, a commission, the United States government or any federal facility, interstate body or other entity.
>
> A.R.S. § 49-201(27).

9. "Decisions by [ADEQ's D]irector shall be affirmed by the [Water Quality Appeals Board] unless, considering the entire record before the [B]oard, it concludes that the [D]irector's decision is arbitrary, unreasonable, unlawful or based upon a technical judgment that is clearly invalid." A.R.S. § 49-324(C); *see also* A.A.C. R2-17-120 (a party may submit to the Board evidence that was not previously considered by ADEQ).

10. AWQS are intended to preserve and protect the quality of water for all present and reasonably foreseeable future uses. In setting AWQS, ADEQ's Director is required to consider protection of the public health and the environment. A.R.S. §49-221.

11. "Statutes shall be liberally construed to effect their objects and to promote justice." A.R.S. §1-211(B).

12. The primary goal when construing statutes is to fulfill the legislature's intent, with the entire statutory scheme being given effect. *Backus v. State of Arizona*, 220 Ariz. 101, 104, 203 P.3d 499, 502 (2009) (citations omitted).

13. Statutes should be interpreted to provide a fair and sensible result. *Gutierrez v. Industrial Commission of Arizona*, 226 Ariz. 395, 396, 249 P.3d 1095, 1096 (2011)(citation omitted).

14. Statutes and rules are construed using the same principles. *Id.*

15. ADEQ's interpretation of the applicable statutes and rules should be given considerable weight unless there is clear statutory guidance contrary to ADEQ's interpretation. *See Arizona Water Co. v. Arizona Dep't of Water Resources*, 208 Ariz. 147, 154, 91 P.3d 990, 997 (2004).

16. "An 'arbitrary' action is one taken 'capriciously or at pleasure,' or an action taken 'without adequate determining principle.'" *Maricopa County Sheriff's Office v. Maricopa County Employee Merit System Commission*, 211 Ariz. 219, 222, 119 P.3d 1022, 1025 (2005)(citation omitted).

Jurisdictional Issues Raised by Rosemont

The Requirements of A.R.S. § 49-323(A)

17. Rosemont interprets A.R.S. § 49-323(A) as requiring the Appellants to show that they will with reasonable probability be adversely affected by discharges authorized under the Permit.

18. Under Rosemont's interpretation, a person who asserted that the authorized discharges were less than would actually occur, because, for example, ADEQ had used clearly invalid technical judgment, would not be allowed to appeal unless the person could show that they might be adversely affected by the erroneously calculated discharges. Carried to the extreme, if ADEQ determined that a facility would have no discharges, no one would have authority to file an appeal alleging that ADEQ's decision was based on a technical judgment that was clearly invalid,[24] which is not a fair

[24] As for example, would have apparently been the case for the WRSA if Rosemont had requested a separate aquifer protection permit for that facility.

or sensible result. Consequently, Rosemont's interpretation of the statute is not consistent with the legislative intent.

19. All Appellants live, work, or engage in recreational activities in the same general geographic area for which the Permit has been issued.[25] Considered in light of the purposes for which AWQS are to be set (i.e., to protect the environment and reasonably foreseeable uses of the aquifer), Appellants, with the exception of Mr. DeConcini, through their testimony, their Responses to Rosemont's Motions to Dismiss, or both, have each demonstrated that there is a reasonable probability that they may be adversely affected by ADEQ's issuance of the Permit.[26]

20. Mr. DeConcini did not testify and did not file a Response to Rosemont's Motion to Dismiss his appeal. Although the Shinsky Appellants argue that Ms. DeConcini was testifying on behalf of herself and Mr. DeConcini, her testimony does not support a finding that Mr. DeConcini might with reasonable probability be adversely affected by the issuance of the Permit. Ms. DeConcini expressed a general concern about the possibility of groundwater contamination, but her testimony was primarily about the potential effect of Rosemont's discharges on her, which was based on her work and involvement at the La Cienagas National Conservation Area and she gave no testimony showing that Mr. DeConcini would be similarly affected. Consequently, the evidence of record does not demonstrate that Mr. DeConcini meets the requirements of A.R.S. § 49-323(A).

Arizona Mining Reform Coalition's Status

21. Rosemont argues that because AMRC is an unincorporated entity, it may not bring an appeal in this matter. In support of its argument, Rosemont cites *Assoc. Students of the Univ. of Arizona v. Arizona Bd. of Regents*, 120 Ariz. 100, 584 P.2d 564 (App. 1974).

22. The Shinsky Appellants argue that an unincorporated entity may bring an appeal, provided that its members would be able to do so individually. In support of its

[25] In the case of the institutional Appellants, such as the Center, its members meet this standard.
[26] Considering the location of the Shinskys' well, they have shown that the authorized discharges might with reasonable probability adversely affect them. Consequently, even if the Board accepts Rosemont's interpretation of A.R.S. § 49-323(A), the Shinskys have standing to bring their appeal.

argument, the Shinsky Appellants cite *Armory Park Neighborhood Assoc. v. Episcopal Community Services in Arizona*, 148 Ariz. 1, 712 P.2d 914 (1985).

23. The *Armory Park* case is not persuasive because in that matter the association at issue was a nonprofit corporation, whereas AMRC is unincorporated.

24. As an unincorporated association, AMRC does not meet the definition of "person" under A.R.S. § 49-201(27).[27] Consequently, AMRC is not a proper appellant in this matter and its appeal should be dismissed. A.R.S. § 49-323(A); *see also Assoc. Students of the Univ. of Arizona*.

Center for Biological Diversity/Coleman's Coralroot

25. Rosemont argues that the evidence related to the Coleman's Coralroot: (1) does not provide a basis on which standing can accrue because ADEQ does not have authority over plants; and (2) any such evidence should be barred because the Center did not raise the Coralroot in its written comments.

26. In setting the AWQS, ADEQ's Director was required to consider protection of the environment, which is broad enough to encompass the Center's concerns about the Coleman's Coralroot.

27. A.R.S. § 41-1092.03(B) limits the issues at hearing to those raised in the appellant's comments at the agency. A.R.S. § 49-323 provides that only persons who filed comments with ADEQ may appeal the grant of an aquifer protection permit. Neither A.R.S. § 49-1092.03(B) nor A.R.S. § 49-323 can be read to require that an appellant's comments must show that it may with reasonable probability be adversely affected by ADEQ's grant of an aquifer protection permit.

28. Consequently, the Center's evidence related to the Coleman's Coralroot may be considered to show that the Center may with reasonable probability be adversely affected by ADEQ's issuance of the Permit.

The Issues Raised by the Appellants

29. As set forth in the Findings of Fact, and incorporated in these Conclusions of Law, Appellants have not shown by a preponderance of the evidence that ADEQ's issuance of the Permit was based on any technical judgments that are clearly invalid.

[27] Cf. A.R.S. §§ 49-421(3) and 49-428 (associations are persons for purposes of appealing air quality actions).

30. An applicant for an aquifer protection permit is required to submit to ADEQ a summary of the proposed facility discharge activities indicating the chemical, biological, and physical characteristics of the discharge. A.A.C. R18-9-A202(A)(4)(a). The preponderance of the evidence shows that mining waste does not have a biological component. Consequently, ADEQ's determination that Rosemont was not required to provide a biological characterization of its proposed discharges is a reasonable interpretation of the rule and does not provide a basis on which to overturn ADEQ's issuance of the Permit.

ADEQ's Decision was not Arbitrary

31. Appellants argue that ADEQ's decision to issue the Permit was arbitrary because, according to Appellants, the administrative record does not have sufficient information to support ADEQ's decision.

32. The preponderance of the evidence shows that ADEQ evaluated the Application based on the requirements found in the statutes and rules and based on the guidance set forth in the BADCT Manual. Consequently, Appellants have not shown that ADEQ's decision to issue the Permit was arbitrary.

Conclusion

33. Appellants have not shown by the preponderance of the evidence that ADEQ's Director's decision to issue the Permit was arbitrary, unreasonable, unlawful or based upon a technical judgment that is clearly invalid. Consequently, Appellants' appeals should be dismissed and ADEQ's decision to issue the Permit should be affirmed.

ORDER

IT IS ORDERED that James E. and Sherry M. Pepper's, Sierra-Club-Grand Canyon Chapter's, and Sonoran Institute's Appeals are dismissed;

IT IS FURTHER ORDERED that Dino J. DeConcini's appeal is dismissed;

IT IS FURTHER ORDERED that the Arizona Mining Reform Coalition's appeal is dismissed;

IT IS FURTHER ORDERED that all other Appellants' Appeals are dismissed;

IT IS FURTHER ORDERED that ADEQ's decision to issue Aquifer Protection Permit No. P-106100 is affirmed.

In the event of certification of the Administrative Law Judge Decision by the Director of the Office of Administrative Hearings, the effective date of the Order is five days after the date of that certification.

Done this day, June 12, 2013.

/s/ Thomas Shedden
Thomas Shedden
Administrative Law Judge

Transmitted electronically to:

Toni Towne, Clerk
Water Quality Appeals Board